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# JOURNAL OF INDIAN EDUCATION

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## TO OUR CONTRIBUTORS

*We intend to bring out a special issue of the* ***Journal of Indian Education*** *on Work Experience and Vocational Education. Articles/studies are invited These may be addressed to the Academic Editor, Department of Educational Research and Policy Perspectives, NCERT, Sri Aurobindo Marg, New Delhi 110 016.*

# A Conceptual Model of Competency-based Teaching-Learning Process in Primary Schools

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*In order to operationalise MLL in different types of primary schools in our country a conceptual model of competency-based teaching-learning has been perceived The model has emerged out of the innovative experiments entitled 'Competency-based Teaching-Learning at Primary Level, Action Research Approach' conducted by primary school teachers of D.M School attached to RIEs There is a need to field-test various issues that emerged out of the model so that it could be tailored suited to the needs of the wider primary school system of our country.*

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LEARNERS and learning conditions in large number of primary schools in our country could be characterised as 'marginal'. A large number of learners have difficulties in negotiating with the learning environment due to (i) cultural differences, (ii) socio-economic differences, (iii) differences in intellectual ability, (iv) stigmatization and

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The authors are extremely indebted to Prof A N Maheshwari, Joint Director, NCERT who had initially conceptualised the innovative experiment entitled Competency-based Teaching in DMS, faculty members of DPSEE, NCERT who had acted as facilitators, the teachers of DMS who had conducted the experiments and offered feedback; and faculty of RIE, Mysore for giving feedback on organisation of SOPT III level training programme

(v) differences in adaptive capability to school environment Learning pace, learning styles and opportunities to learn differ from person to person. The marginal learners not only achieve poorly but also receive disadvantaged treatment in the classroom from teachers and peers In addition, learning environment differs in different types of primary schools such as formal schools, non-formal schools, schools with large sized classes, schools operating in multigrade context, etc

There is a need to adjust instruction to bridge the gap created by multi-level differences in learners and learning conditions as well as to design ways of enhancing the pace of development of the learners (Piaget, 1952, Kohlberg, 1976, Sigel, 1969 and Sullivan, 1967) An effective model of teaching-learning intends to empower the learners with the ability to master various competencies, and empower the teacher with appropriate approaches/techniques/tools to operationalise competency-based teaching within the constraints of teaching-learning conditions

Various teaching models have highlighted distinctive approaches/strategies of teaching-learning in different subject areas Appropriate approaches/strategies could be chosen/combined/tailored from the existing storehouse of teaching-learning models to suit the requirements of learners/teachers and learning conditions Appropriate tools from several models may be combined to achieve the requirements of multiple learning and learner's context An effective teacher searches for new tools/strategies; refines the existing one and combines the tools/methodologies/strategies to operationalise the learning tasks Since the central focus is to enhance the ability of learners to perform the learning tasks as specified by MLL, tools chosen from various models in combination can empower the classroom teachers.

With the objective of enhancing the learner's ability to learn, an effective teacher finds no dichotomy between concept attainment (Bruner, Goodnow and Austin, 1967), enquiry training (Suchman, 1962), inductive thinking (Hilda Taba, 1966; Tennyson and Coeehiarella, 1986) cooperative learning (Dewey, 1916 and Herbert Thelen, 1960), non-directive teaching (Rodgers, 1982), mastery learning (Bloom, 1971) and development of divergent abilities (Torrance, 1962) For example, inductive teaching includes concept formation, problem-solving ability and information processing. Thus, though the existing storehouse of teaching models have highlighted different approaches/strategies/ tools/methods/modes of learning, it could not provide a structure of events and their phasing under which effective teaching-learning could be sustained during one academic session in different types of primary schools

Again, in an effective learning situation neither teacher nor student is the absolute master. In teacher guided learning, the learner should be allowed to work in his/her own speed to develop self-initiation and self-direction. In cooperative learning/peer tutoring the teacher is to assist learning across all curricular areas, ages and maturity level to improve social skill, academic learning and production skills In self-learning, the teacher is to provide self-learning packages and materials. Practice/drill starts with structured practice followed by guided practice where teachers' guidance is important and choosing a particular strategy or their blending for a particular lesson/unit for a group of students will depend on learning conditions—the type of learning, pace of learning and opportunities to learn

## Objective

In this paper an effort has been made to develop a conceptual model of competency-based teaching-learning process in primary schools which could be applied to suit the requirements of different types of primary schools such as formal schools, non-formal schools, schools where multi-grade teaching is practised, etc

## Methodology

The parameters of the model and phasing have been derived from the findings, experiences and difficulties faced by the primary school teachers during the conduct of experimentation on competency-based teaching-learning in Demonstration Schools (DMS) attached to Regional Institutes of Education (RIEs), feedback obtained from primary school teachers during review meetings, and from RIE faculty, continuous dialogue with parents and feedback obtained from participants attending the annual conference of primary school teachers held at RIE, Mysore during 1995 and the experience gained by RIE faculty in conducting special Orientation Programme for Primary School-Teachers (SOPT) III level

## Background of Experiences Gained through Experimentation on Competency-based Teaching by DMS Teachers

The innovative experiment entitled 'Competency-based Teaching-Learning Approach' was introduced in the primary section of the D M Schools attached to the Regional Institutes of Education since July 1995 Three weeks' orientation was provided to all primary school teachers of four Demonstration Schools on various aspects of competency-based teaching. During June 1995 in a meeting of Headmasters of D M Schools with the Joint Director, NCERT and faculty members of DPSEE, NCERT, the various operational aspects of competency-based teaching programmes were conceptualised It was decided that the practice of half-yearly and annual examinations would be dispensed with The shape of the primary classroom was changed to ensure the requirements of activity-based joyful teaching-learning approach and maximum participation of the children It was also decided that each school will constitute a team of teachers under the leadership of Incharge, Primary Section for the purpose of carrying out the teaching-learning programmes and its monitoring Base-line assessment of learning achievement was also made.

The team of teachers in all the four Demonstration Schools at Ajmer, Bhopal, Bhubaneswar and Mysore carried out the experiments following the sequential steps as shown below

*Sequential Steps*

1 Identification of competencies/sub-competencies related to various units of the content area by the subject teacher
2 Administration of School Readiness Test to measure reading, numeracy readiness in Class I

3. Organisation of child-centred, activity-based joyful learning activities through approaches like teacher guided learning, child to child learning, peer group learning, self-learning and drill/relearning supported by demonstration of competencies in handling OB kits/mini tool kits/technology devices and teaching aids
4. The evaluation of the achievement of learners through teacher-made first shot diagnostic test.
5. Learners were classified into masters and non-masters and analysis of reasons of non-mastery was undertaken. The non-masters were grouped into different categories based on different kinds of shortcomings in learning
6. The non-masters were exposed to remedial teaching. The team prepared a remedial programme in the light of major shortcomings identified by the teachers through diagnostic tests
7. Administration of second round of teacher-made diagnostic test on non-masters to assess learners' progress
8. Identification of 'hard spots' in content area/competency which are difficult to achieve

### *First Review and Feedback*

About a month after the commencement of the experiment a team of two senior faculty members from NCERT headquarters which was on a routine visit to RIEs for periodical review of progress of implementation of the programmes held a special meeting with primary teachers to assess the progress of competency-based teaching. In addition to primary teachers, the Headmaster of DMS, Dean of Instruction and Principal of RIE were also present in the meeting. In the meeting various issues like parental resistance, required administrative and academic support, the low base-line learning achievements, workload of the teachers, etc. figured prominently. The teachers reported that since the level of learning achievement is low due to heavy doses of remedial instructions to bridge the gap between existing level of learning and expected level of learning, the progress of the learners in acquiring new competencies was found to be very slow. Keeping in view the parental pressure and load of teachers, the experiment was confined to Class I and it was decided that the experiment be extended to other classes of the primary schools from the next academic session, i e. 1996-97.

### *Dialogue with the Parents*

The teachers encountered initial difficulties in the form of pressure from parents that only tests and assessments are being held for the first month and the practice of giving homework has been discontinued A parent-teacher conference was organised to clarify the initial doubts with regard to various aspects of the experiment The philosophy and the process of experiments were clarified through discussion with individual parents as well as through parent-teacher meetings The parents were also told that henceforth the achievement of the learners will be reported in the form of mastery or non-mastery in a competency/sub-competency area Parents were requested to meet the concerned teachers whenever called for counselling

### *Difficulties Faced by the Teachers*

When the teachers started the experiments they faced difficulties in the formation of appropriate teaching-learning strategies, in preparing teacher-made diagnostic tests and in preparing remedial instruction in the absence of adequate teacher guides The difficulties were sorted out through discussion with RIE faculty members individually A number of in-house meetings were organised wherein the primary school teachers, faculty members, Deans and Principals of RIEs had participated to sort out the difficulties involved in operationalising the project These meetings acted as morale boosters for teachers Required administrative support was provided to the teachers

*Maintenance of Child-wise Record and Revision of Progress Report Card*

Child-wise records were maintained in all the Demonstration Schools showing performance of the child in different competency areas in different subjects. Progress Report Card was revised and the parents were informed about the performance of the students in different competency areas.

*Reporting by Individual Teachers and Monitoring*

The monthly report concerning the experiments was sent regularly to DPSEE, NCERT, New Delhi Along with the reports, the diagnostic tools and the nature of remedial instruction were also enclosed for perusal of Council authorities.

*Decisions of the Second Review Meeting with Joint Director, NCERT*

After the review meeting with Joint Director in November 1995 at RIE, Mysore many issues related to competency-based teaching-learning programme had taken final shape which had implications for all the Demonstration Schools. In the review meeting various issues like modalities of ensuring parental support, formulation of activity bank, continuous and comprehensive evaluation and need of orienting the teachers in action research methodology were highlighted.

*Conference of Primary Teachers*

Conference of Primary School Teachers of NCERT, D.M Schools was held at RIE, Mysore during 26-29 December 1995 where future action plans were finalised to sustain competency-based teaching learning in the Demonstration Schools

## Background of Experience Gained by RIE Faculty Members in Conducting SOPT III Level Teacher Training Programme

During 1995, faculty members of RIEs had directly organised SOPT III level training programme in a rural school situation to gain experience in organisation of school-based recurrent in-service training of primary school teachers As an outcome of the training programme the following issues were highlighted .

- Demonstrative teaching was found to be effective where students could observe the performance competencies of teachers
- Interactive teaching during demonstration was found to be effective
- Use of OB kits/teaching aids/other technology devices during demonstration helped in sustaining motivation of the learners

- There is a need to highlight the consequence competencies, i e terminal learning behaviour of the learners at mastery level.

## Model Building Issues

The following major issues are involved in building the model of competency-based teaching-learning in primary schools·

- How competency-based teaching in primary schools could be made more functional and need-based?
- Is there any linkage between teacher competencies and student competencies?
- How to assess base-line learner and classroom characteristics?
- What are the alternative learning styles/modes of child-centred/activity-based/joyful teaching-learning in different subject areas in different types of elementary schools in the backdrop of differential learning abilities, socio-cultural milieu and level of parental support?
- How to make a diagnosis of learner's difficulties in different subject areas?
- How to classify learners into various categories according to their ability and style of learning?
- What are the intervention strategies for different types of learners?
- How to measure the terminal learning outcome?
- How to identify 'hard spots' in learning?
- What are the strategies to empower the teaching-learning process?
- How to standardise the model of competency-based teaching-learning so that the model could be replicated/tailored to the needs of rural schools where multi-grade teaching is practised or where the class size is large?

The decisions on different issues are also interlinked in the sense that a decision taken on one issue may influence the decision taken on other issues Each set of decisions may generate a variety of constraints on the model and may thereby influence the practical/applied or theoretical consideration in-built in the model. Various dimensions of the model are· identification of parameters, flow of phases, structure of learning environment, student-teacher communication pattern and the support system

## Time Frame

The model was developed from October 1995 to March 1996 on the basis of feedback received from experimentations conducted by primary school teachers working in NCERT-managed Demonstration Schools located in RIEs at Ajmer, Bhubaneswar, Bhopal and Mysore and direct organisation of primary teachers' training camp (III level training under SOPT) by faculty of RIEs

## Parameters of the Model

The parameters of the model are given below

1 Nature of competencies to be acquired by a teacher for operationalising MLL-based teaching
2. Testing tools/procedures to assess base-line, intermediate and terminal learning outcome
3 Subject-wise/unit-wise competencies to be developed in children
4 Alternative learning style/modes of child-centred/activity-based/joyful

learning in different types of elementary schools

5. Procedure of classification of learners on the basis of intermediate learning achievement
6. Intervention strategies for different types of learners.
7. Measurement of terminal learning outcome/consequence competencies
8. Identification of 'hard spots' in concepts/competency areas
9. Reformulation of student competencies (MLL)
10. Revision of curriculum/textbooks/workbooks/teachers' guides/evaluation procedure/teacher training strategy.
11. Empowerment strategies in teaching-learning process

## Phasing of the Model

The flow of phases is shown in Diagram 1 on page 8

## Structure of Learning Environment

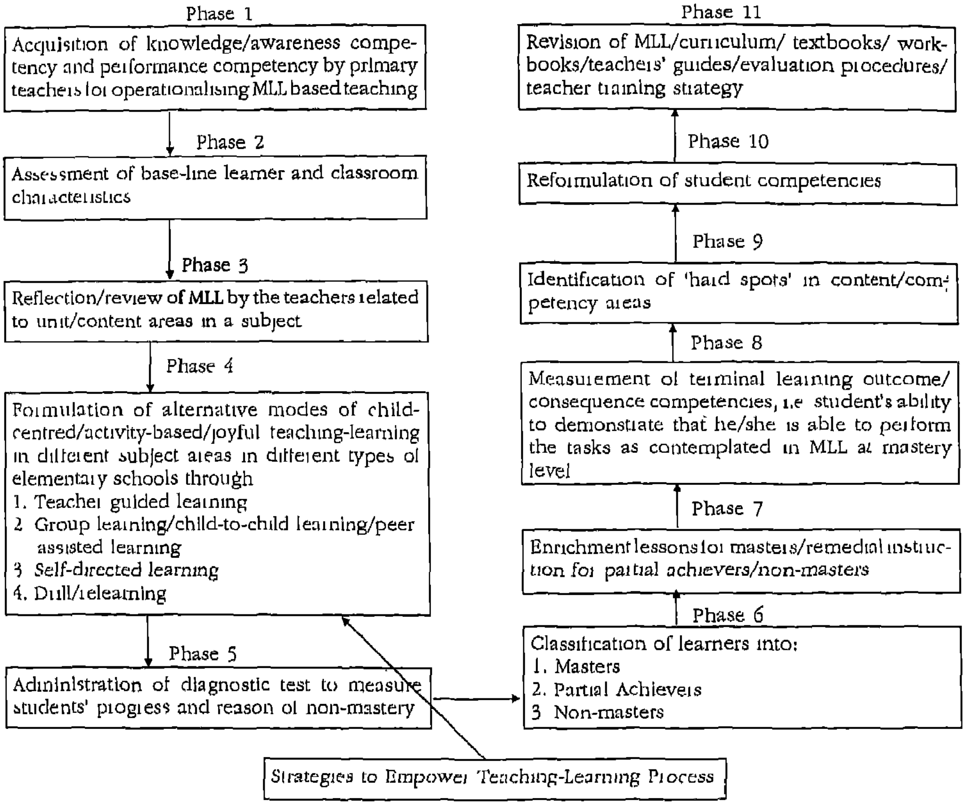
The learning environment has been conceived as moderately structured with in-built flexibility Though learning environment differs in different types of primary schools, there is a need to ensure that MLLs are achieved at mastery level or to identify that certain MLLs are not achievable under a specific context In the whole teaching-learning process the child/learner is the central focus and the role of the teacher is to facilitate learning, improve learning environment through time/space management, effective supervision, delegation of responsibility to peers/seniors and ensuring community support

## Student Teacher Communication Pattern

- The teacher should prepare activity-based work schedules for concept attainment, enquiry training, problem-solving, developing of divergent abilities, inductive reasoning and information processing
- The teacher should supervise, guide and reflect on student responses to activity-based work schedules.
- Intervention of a teacher should be minimum and he/she should not intervene unless requested by the learner.
- By reflecting, paraphrasing and summarising responses, the teacher should enhance the learners' motivation to complete the task
- The teacher should use questions/examples, illustrations to find out differentiation, identification, cause and effect relationship, implication and provoke students to ask questions, give examples and illustrations
- The teacher should determine students' readiness and match tasks to students' level of cognition
- The teacher should facilitate self-study, cooperative learning, peer-assisted learning, community-assisted learning and drill
- The teacher should encourage analysis of the merits of alternative strategies rather than only the best strategy to solve a problem The teacher should emphasise that there are different ways of performing a task to solve a problem
- The teacher should help the students to enquire by providing facts, information focusing on a particular problem and raising questions.

DIAGRAM 1

**Conceptual Model of Competency-Based Teaching-Learning in Primary Schools – Phasing**


Phase 1
Acquisition of knowledge/awareness competency and performance competency by primary teachers for operationalising MLL based teaching
Phase 2
Assessment of base-line learner and classroom characteristics
Phase 3
Reflection/review of MLL by the teachers related to unit/content areas in a subject
Phase 4
Formulation of alternative modes of child-centred/activity-based/joyful teaching-learning in different subject areas in different types of elementary schools through
1. Teacher guided learning
2 Group learning/child-to-child learning/peer assisted learning
3 Self-directed learning
4. Drill/relearning
Phase 5
Administration of diagnostic test to measure students' progress and reason of non-mastery
Phase 6
Classification of learners into:
1. Masters
2. Partial Achievers
3 Non-masters
Phase 7
Enrichment lessons for masters/remedial instruction for partial achievers/non-masters
Phase 8
Measurement of terminal learning outcome/consequence competencies, i.e student's ability to demonstrate that he/she is able to perform the tasks as contemplated in MLL at mastery level
Phase 9
Identification of 'hard spots' in content/competency areas
Phase 10
Reformulation of student competencies
Phase 11
Revision of MLL/curriculum/ textbooks/ workbooks/teachers' guides/evaluation procedures/ teacher training strategy
Strategies to Empower Teaching-Learning Process

1 Teacher's ability to demonstrate the skill acquisition process to learners in different subject areas.

2 Activity-based work schedule in different subjects for concept attainment, enquiry training, problem-solving, Development of different abilities

3 Strategies of handling instructional materials/support system and technology devices to individualise instruction and for alternative teaching-learning styles

4. Interactive communication strategies/small group communication

5 Classroom management/supervision strategies/timetable/seating arrangement/management of out of the classroom activities

6 Teacher's ability to formulate competency-based tests/diagnostic tests.

7 One teacher handling all subject areas except language in formal schools

8 Strategies of combining grades and within grades mixed ability groups.

9. Mode of obtaining parental/community support.

10 Strategies to meet special needs of first generation learners/disadvantaged learners

11 Collaborative action strategies—staff meetings/meetings with experts

12 Strategies to motivate students

13 Manipulation of learning time and opportunities to learn.

14 Teachers' manipulation of constraints and inferences

- The teacher should highlight the modalities of quick learning

## Support System

- Textbooks, workbooks, teachers' guides, self-instructional packages, learning aids and technology devices
- Innovative timetable suited to different types of schools, i e formal, non-formal, multi-grade context, etc
- Space management in the context of multi-grade situation and school with large sized class.
- Activity bank to facilitate child-centred/activity-based/joyful learning
- Supportive, democratic and facilitative learning environment
- Use of community resources in teaching-learning
- Structuring of learning environment in such a way that it becomes responsive to the learner's needs
- Availability of resources for self-directed learning

## The Outcome

It is expected that the children's ability to perform the task as outlined in MLL in different subject areas at mastery level would be enhanced.

## Issues Related to Testing of the Model

Various parameters of the model of teaching-learning and the following issues related to operationalisation of the model are to be tested and tried out through action research approach

1. What are the general competencies, subject specific competencies and the context specific competencies/process related competencies? There is a need to redesign competencies in the context of multi-grade primary schools, non-formal schools and schools with large size of classes. Student competencies (MLL) identified in different subject areas are to be field-tested in different types of elementary schools so that 'hard spots' in content areas and difficult competencies for a particular age-group could be identified.
2. What are the competencies relevant to the ability, interest and motivation level of the learners belonging to a particular age-group in order to make elementary education child-centred?
3. There is a need for deeper analysis on the question whether all learning should be competency-based
4. What are the multiple/alternative strategies to formulate modalities of teacher-guided learning, child-to-child/group learning, peer-assisted learning, self-learning activities and practice of drill/relearning in different types of elementary schools?
5. What type of materials for self-directed learning/peer managed learning and teacher-guided-learning are to be prepared? In what grade self-learning, child-to-child learning, peer-directed learning and teacher-guided learning are more effective?
6. Activity bank is to be developed for incorporating the activities to implement child-centred/activity-based approaches of teaching-learning The activities are to be developed through a consultative culture and are to be field-tested.
7. The style of learning is to be redesigned in such a way that it activates right hemi-

sphere/right cerebral functioning (right brain function of the child) which are still unexplored and has high potential in enhancing learning achievement Studies indicate that the present style of teaching-learning dominates left hemisphere (left brain) functions In order to activate right hemisphere/right cerebral/right brain function the teaching-learning activities should promote creativity, analytical ability, divergent ability, problem-solving ability, inductive reasoning and enquiry training

8. How to ensure the smooth transition of first generation learners from home to school? How to sustain the interest and motivation of first generation learners in Class I and II
9. How is the seating arrangement to be made in situations like multi-grade setting/schools with limited space? How are classes to be conducted in open spaces outside the classroom where classroom space is limited?
10. How is the time-table to be formulated in non-formal schools and in the multi-grade context?
11. How to combine grades and within the grades mixed ability groups which may vary in different multi-grade settings, i e primary schools with four classes, with three classes and with two classes?
12. How should the availability of time for teaching-learning in a multi-grade context be maximised so that the prescribed courses could be covered within the time limit and MLL realised through formulation of child-centred/activity-based situations with available time/space/material/resources and community support?
13. How to use the aids/materials/technological devices in competency-based teaching? How such materials could be developed within the school system?
14. How to make the evaluation process continuous and comprehensive? With the limited time available how teacher-made diagnostic tests could be used in a multi-grade context? In order to report the continuous and comprehensive performance of the learners to the parents how should the report card be formulated?
15. What should be the strategy of remedial teaching for partial achievers and non-masters and enrichment lessons for masters in different subject areas and how could these be operationalised in different types of elementary schools?
16. Remedial instruction cannot be provided through group learning How could the feedback/correction of tasks/follow-up of learners' difficulties and remedial instruction be provided in teacher-guided learning, self-learning and drill?
17. There is a need to analyse the reasons of non-mastery in different competencies related to different subject areas through appropriate tools and techniques
18. There is a need to standardise the remedial measures and enrichment lessons which could be adopted by a teacher for use along with regular teaching work in different subject areas and in different learning contexts, i e. in formal schools, in multi-grade context, in non-formal schools, etc
19. If every Saturday the children of Class I and once in a month (preferably a

Saturday) all children of the Primary Section (Classes I to IV/V) do not attend school and the teachers review various issues related to competency-based teaching through interaction with other teachers/parents through changes in the time-table, to assess whether it will reduce learning time or would enhance better learning

20 There is a need to field test the effectiveness of the model of one teacher teaching all subjects except language

21 How to initiate and sustain continuous dialogue with the parents to obtain support to operationalise competency-based teaching-learning and evaluation?

22. There is a need to reformulate Competency-based in-service training of teachers in different subject areas. How should the training be formulated?

23 In order to train teachers in multi-grade teaching what should be the training content and training methodology? What skills should teachers possess for teaching in a multi-grade setting?

The model of competency-based teaching-learning developed is to be tested in different types of elementary schools, both formal and non-formal, so that it could be tailored to the needs of the wider primary school system of the country Teacher training strategy should also be restructured so that teachers teaching in different types of primary schools are empowered to meet specific needs of the teaching-learning process Teachers should be oriented to action research methodology so as to enable them to tailor the parameters of the model to classroom needs in order to improve the classroom practices through participatory and collaborative strategies.

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# Dissemination of Educational Research to Practitioners

## *Some Issues*

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*In a developing society where resources are scarce research findings become more meaningful when these are accepted and assimilated by the practitioners with a view to not only improving their own professional expertise but also to pass it on to the learners/society by way of better strategies and enriched interactions This is possible only when the significant findings of researches reach the practitioners and they are able to grasp their implications for effective classroom practices. It is in this context that the present paper has raised certain basic issues involved in the dissemination process including that of the need for attracting attention as well as for easy comprehension by classroom teachers*

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RESEARCH activity is a diligent effort in answering certain questions and testing certain conjectures They are mostly reported in technical language in research journals These are normally understood by technical researchers alone but seldom comprehended by the practitioners at the grass-roots level

Normally, any research journal which has its core concern for certain kinds of studies will document and disseminate such research studies to enable a researcher to get a glimpse of the entire strategy of research operations and outcomes. This tradition of dissemination of technical information in technical language is certainly a welcome one Research abstracts too, attempt to communicate the research operations and outcomes in a technically worded condensed format In this context, if one looks at the number of educational journals published in India, it is quite heartening to note that there are more than 100 in this category and some of these are internationally acclaimed too

But, the fundamental question is why is research to be conducted? Are the research findings not to be used for the betterment of the system for which it is intended? May it be fundamental research or applied research, each of these is expected to throw some new light or revalidate the earlier findings, or help in development and validation of certain theories/models, etc. Indeed, ultimately the research findings must go back to the system If one can conceive a model of beneficiaries or contributors of research, it may look as under:

| *Group* | *Levels of Beneficiaries/Contributors of Research* |
|---|---|
| A | National Level Educational Planners<br>National Level Educational Administrators |
| B | National Level Specialists<br>State Level Specialists |
| C | District Level Specialists<br>Block and Village Level Practitioners |

If one analyses the researches reported at different levels, these are found either at the national or at the state level, and very few at the district level

Ideally, research findings are required for both group 'A' and group 'C' functionaries. In group 'A' research findings are required by functionaries because a set of research trends is to be the basis for bringing about change in the educational planning and administration whereas research findings are required by group 'C' functionaries because such findings should form the basis for any research-based intervention at the grass-roots level

For group 'A' functionaries technical language of reporting research is quite acceptable as technical people form a part of this group at the national level For group 'C' functionaries, however, technical reporting does not seem to be suitable. In order to effectively reach out to this group it is imperative that the research strategies and findings are disseminated at the grassroots levels in vernacular languages, in a style in which an average school teacher can understand the implications As a matter of fact, in a country like India, which has so many regional languages and media of instruction, one cannot expect every school teacher to be familiar with English, particularly at the elementary level. This is all the more true of our rural schools

Sen Gupta (1996) aptly writes " the chasm between researchers and practitioners still remains in education Nothing seems to percolate down to the classroom level in spite of the plethora of researches going on at the university level and those done by research and training organisations . " In this backdrop the author strongly feels that if at all, the researchers attempt to help the system by giving certain solutions to problems, these need to be expressed in regional/vernacular language for ready acceptability and assimilation

It has been aptly and amply emphasized in the 1996 International Seminar on School Effectiveness and Classroom Processes at Primary Stage, organized by the NCERT during July 1996, that there is an urgent need to work out strategies for dissemination of research findings in simple language The present paper reinforces the above contention

## Focus

The million dollar question is how to convert a highly technical research report/paper into a simple write-up without losing the rigour and seriousness of the issue so that the findings become communicable to school teachers? The author strongly feels in this context that the individual/group trying to disseminate the technical research findings into simpler vernacular language must be equally competent to understand and undertake such an activity The reasons are obvious At various stages a number of decisions will have to be taken to simplify, delete, substitute certain terms This requires a good deal of clarity and competence on the part of the editor/editorial team It is further suggested that a group of equally competent people in research and language need to finally approve a manuscript. Keeping in view the professional competence required, it is proposed that such activities be undertaken by research organisations, education institutes, university departments, and by selected NGOs.

The above implies that. (a) The dissemination activity of this nature is to be taken much more seriously than the technical research dissemination as the probable impact of such a dissemination can have a multiplier effect (b) Such an activity may also be an institutionalised one. Currently, the research scenario in the country is changing in the light of the District Primary Education Programme (DPEP), a strategy which aims at decentralisation of educational planning, with more emphasis on micro level planning. Under this programme, the 'teacher capacity building' activities are also getting due importance Further, teachers at the grassroots level are being encouraged to undertake action research projects to solve their immediate problems and make instruction more effective. This will also help relieve their monotonous style of functioning Such activities need to be undertaken by every school teacher 'Teacher Centres' or 'lead schools' need to be installed where professional level discourses/exchange of ideas are possible All these are possible and effective only if a teacher is motivated. So, to have motivated teachers, the entry behaviour of aspirants at teacher training colleges needs to be properly assessed especially in terms of their attitude and aptitude Teachers need to be given good pre-service training and a periodic retraining through a number of in-service courses The teacher unions/federations and such professional organisations must focus more on the qualitative improvement of teaching as a respectable profession

Researches must become an integral part of a teaching career but different kinds/aspects of research are to be made known to the teachers at different levels As long as the teacher is devoid of being a beneficiary of research, his/her professional career can be said to be incomplete. This feeling and volition must be built in our teachers who are the agents of social change in any society This can be made possible only if dissemination of researches is made palatable to classroom practitioners.

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# Training of Primary Teachers

## *An Appraisal of Training Designs*

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*In-service training of teachers at various levels is receiving much attention these days A variety of such training programmes are being organised by national, state and district level organisations, but hardly any research has gone into the identification of content for these courses, identification of the needs of the target group, organisation of these programmes and their effectiveness and finally, a follow-up of these programmes to ascertain their utility and efficacy In this article the authors while stressing the need for such researches have described an appraisal study to assess the training designs prepared by some of the DPEP states. The paper also suggests ways and means to improve the quality of these training designs*

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Declining school quality has been identified as one of the most serious problems facing many Third World countries (Chapman and Carrier, 1990, Lockheed et al, 1990) In India, base-line achievement studies conducted by the National Council of Educational Research and Training (Jangira et al., 1994) and the National Institute of Educational Planning and Administration (Verghese, 1994) painted a dismal picture with regard to learning achievement of pupils in primary grades The situation is a cause for concern and calls for appropriate steps to improve the same

Of the strategies to improve the quality of education, in-service education of teachers occupies an important place Researchers have emphasized the importance of a link between the quality of education and the adequacy of opportunities **for the** professional development **of teachers**. (Quality of Education Review **Committee** 1985 and Joint Review of Teacher Education 1986). Recurrent training of teachers is widely recognised as a significant input to improve the quality of education in our schools

In-service training of teachers, to be effective, needs to be designed appropriately. Recent reviews of research on in-service education converge in their views as to why so much of the in-service education available to teachers is ineffective (Wood and Thompson, 1980). There are a number of reasons contributing to ineffectiveness of in-service education of teachers. For instance, training content is decided by people other than those for whom in-service education is meant. In-service programmes rarely address individual needs and concerns (Fallen, 1983). Further, there is absence of a conceptual basis in the planning and implementation of in-service programmes that would ensure their effectiveness

In-service training programmes therefore, need to be designed systematically on the basis of assessment of training needs of the target group The objectives, training content, training material and transactional approaches have to be decided in the light of identified needs

## District Primary Education Programme (DPEP)

Since in-service training of primary teachers and their trainers is deemed to be a significant intervention in the DPEP to improve the quality of primary education, therefore, all the DPEP states have developed a design for the training of primary teachers and their trainers As mentioned earlier, the training to be effective needs to be designed systematically A need was, therefore, felt to appraise the training designs developed by different DPEP states. The appraisal study was undertaken with the following objectives

## Objectives

— To assess the strengths and weaknesses of the training developed by different states

— To provide a forum to the states to learn from experiences of others

— To suggest ways and means to improve the quality of training designs

## Instrument

Guidelines were developed for the appraisal of training designs related to aspects such as need assessment, objectives, duration and content of training, training hours, transactional approaches, follow-up action, etc. The guidelines were discussed with the evaluators in detail in order to ensure commonality in perceptions

## Methodology

Two workshops were organised—one at the NIE campus, New Delhi from 16 to 18 January 1996 and the other at the RIE, Mysore from 22 to 24 January 1996. In these evaluation workshops, training designs developed by the states were appraised by the evaluators in the light of guidelines developed for the purpose These workshops also helped the participants to share their experiences with the participants from other states with regard to different features of their training design.

## Delimitations

The study was limited to the states of Assam, Haryana, Maharashtra, Madhya Pradesh, Karnataka and Tamil Nadu

## Main Findings

The following are the main findings of the study

### *Coverage of Personnel*

States have designed in-service education programmes for primary teachers, head teachers, heads of Cluster Resource Centres (CRCs), Coordinators, Block Resource Centres (BRCs), members of Village Education Committees (VECs), faculty of DIETs and SCERTs The personnel covered in different DPEP states are mentioned in Table 1.

The table shows that all the states have designed programmes to provide training to primary teachers and their trainers Karnataka and Tamil Nadu are yet to set up Cluster Resource Centres (CRCs). Some states have also planned to cover supervisory staff such as Block Education Officers/Assistant Education Officers for suitable training so that they also extend support to primary teachers to re-orient their teaching-learning process in the light of experiences gained by them during training.

### *Needs Assessment*

The study revealed that training needs of different functionaries—primary teachers, head-teachers, and trainer-heads of CRCs, Coordinators, BRCs, DIET/SCERT faculty were identified by states on the basis of (i) the experiences of SCERT/DIET faculty while working with primary teachers and other functionaries, (ii) findings of the baseline learning achievement studies conducted by the NCERT and the NIEPA, and interactions with concerned personnel. States have, however, not identified training needs of these functionaries by conducting research systematically This may be due to the reason that states needed to launch

TABLE 1

**Functionaries Covered in Training Programmes**

| *State* | *Primary teachers* | *Head-teachers of primary schools* | *Heads of CRCs* | *Coordinators, BRC, and Resource Persons* | *VEC members* | *DIET/SCERT/ State/District Resource Groups* |
|---|---|---|---|---|---|---|
| Assam | √ | √ | √ | √ | √ | √ |
| Haryana | √ | √ | √ | √ | √ | √ |
| Karnataka | √ | √ | CRs not set up yet | √ | √ | √ |
| Madhya Pradesh | √ | √ | √ | √ | √ | √ |
| Maharashtra | √ | √ | √ | √ | √ | √ |
| Tamil Nadu | √ | √ | CRs not set up yet | √ | √ | √ |

in-service training programmes at the earliest possible Perhaps another reason could be the lack of adequate expertise available at the district, sub-district level to undertake need assessment studies

Daresh (1987) reviewed 160 studies dealing with in-service education and training of teachers and concluded that staff development through in-service education is viewed as more effective when content is based on the self-reported needs of the participants. Therefore, there is a need to assess training needs of different functionaries systematically by conducting studies

### *Objectives of Training*

States had not delineated explicitly objectives of training for different functionaries as revealed from their training designs Fullan (1982) observed that the failure to clarify intended goal(s) of the programme is one of the major pitfalls which threaten the success of an in-service training. Therefore, there is a need that training programmes must reflect explicitly the objectives of training. These should further be negotiated with trainees at the commencement of the programme

### *Content of Training*

The content of training of different functionaries has been identified by the states It, however, differs from one state to another For instance, the content of training delineated by Tamil Nadu for primary teachers teaching Classes III to V comprises topics such as DPEP objectives, mobilisation of community resources; role of Mother Teacher Councils (MTCs), Parent Teachers Association (PTAs), education of the disadvantaged, Village Education Committees (VECs), gender sensitization, teaching learners with disability, methods of preparing low-cost and no-cost teaching aids, organisation of co-curricular activities, learner-centred approach, evaluation, etc. The content of training delineated by Kerala for primary teachers constitute topics like quality of primary education, DPEP, minimum levels of learning in mathematics, Malayalam, environmental studies, preparation of teaching aids, evaluation, etc. The study further revealed that content enrichment has not been given due emphasis.

The states need to pay adequate attention to identify content enrichment needs of primary teachers particularly in mathematics and environmental studies (science). Further, fine tuning of skills such as communication, human relations, classroom management, motivating students, dealing with individual differences among students (mixed ability groups, slow learners, gifted children), evaluating one's own teaching, assessing students' work and progress, etc need consideration by the organising authorities

### *Periodicity of Training*

It was heartening to note that most of the states have planned to provide recurrent training to primary teachers and other functionaries For instance, Tamil Nadu has planned to provide training to primary teachers for six days followed by three days training every year Similarly Kerala has planned to provide five days training to primary teachers followed by training of the same duration every year. Haryana has planned seven days, training of primary teachers every year.

Karnataka and Maharashtra which have not visualized recurrent training of teachers need to reshape their training designs. This is because staff development and in-service education is viewed more effectively when it is part of training that continues over an extended period of time in comparison to short-term, 'one-shot' sessions (Daresh, 1987).

*Transactional Approach*

Activity-based approach, demonstration are the transactional approaches which are planned to be followed in the training of teachers This is a healthy sign because lecture/lecture-cum-discussion has here to fore, been the predominant transactional strategy This approach makes the participants passive listeners and erodes the effectiveness of the programme to a great extent Daresh (1987) also observed that participants preferred activities and programmes which made them active participants in a process, not passive observers of presentations by others who talked at them. They also valued demonstrations much more than mere lecture presentations

### Monitoring and Evaluation of Quality of Training

Most of the states have drawn up plans to monitor and evaluate the quality of training by seeking trainees' perceptions at the end of the programme either through a questionnaire/and/or interview This is not an adequate measure to achieve the desired objective.

Training programmes can yield desired dividends only if the training is of appropriate quality To ensure the same, a comprehensive monitoring and evaluation mechanism needs to be developed Concrete indicators of the quality of training could be participants' gain in knowledge, refinement of requisite skills, desirable effect on their self-concept, attitude towards work, pupils and the school. Participants' satisfaction with the programme and the desired changes in their instructional behaviours are also the indicators of the quality of training A monitoring and evaluation system should address the training inputs, processes and outcomes Attempts need to be made to relate outcomes to processes and inputs

### Follow-up

The review of training designs developed by different states revealed that they had not paid adequate attention to the follow-up aspect of the training It would be desirable on the part of the states to make it an integral component of teachers' in-service training

### Suggestions

The following are a few suggestions to improve the design for the training of different functionaries·

- State DPEP offices need to evolve strategic plans to cover different categories of personnel for initial and recurrent in-service training
- Training needs of different categories of personnel should be assessed through research studies
- In some states the training package is the same both for primary teachers and trainers The states need to consider additional inputs for trainers in the light of their responsibilities, role as trainers.
- Training designs did not specify explicitly the objectives of training visual-

ized for different categories of personnel These need to be spelt out precisely so that their attainment is monitored effectively

- States need to develop a mechanism for monitoring and evaluation of training quality
- Content of training of primary school teachers as visualized by DPEP states reveals that content-enrichment of teachers in different school subjects has not been given due emphasis There is a need to assess teachers' content enrichment needs through research studies Content enrichment in subjects like mathematics and environmental studies (science) needs to be an important component of teachers' training
- Presently training input is the same for all teachers working in different contexts Local specific needs of teachers working in different contexts are not being taken care of There is a need to identify local specific content needs of teachers working in different contexts
- Monthly meetings of teachers at the cluster level has been visualized. To ensure that these meetings enrich teachers' competencies, there is a need to structure the content of monthly meetings and to develop suitable material for the same DIETs should take up the responsibility of developing material and should oversee the effectiveness of monthly meetings

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# On Teaching the Craft of Clio

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*Various attempts have been made by different organisations to evaluate history textbooks from the point of view of promoting national integration History, if rightly taught, is one of the capital studies for promoting the educational development of pupils of all abilities, particularly at the secondary stage of education In the present article, the author is of the opinion that teaching of history can become more effective, if it is taught as a 'mode of enquiry' rather than as 'a body of knowledge' History is not merely what happened, it is what happened in the context of what might have happened The author says that there is a need to perceive history and history teaching as a process, laying much less emphasis on the content to be learned rather than on the process of learning This methodology of teaching history will help the students to understand the people of the past better than they understand themselves*

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CLIO, the muse of history, has remained one subject within the school curriculum which has often attracted much of the media hype Most of such reactions are generally directed on the content which is presented in our history textbooks. In fact, presentation of the history content in school textbooks and an attempt to free them from the various biases and prejudices has for long remained a major international concern. The very history of the attempts to free the textbooks from different types of biases dates back to the post-First World War period Thereafter, very many attempts have been made in different countries and one may specifically like to make a special mention of the prodigious contribution, of organizations such as the UNESCO and George Eckert Institute for International Textbook Research, in this direction Creditable work in this area in our own country has been done by organizations such as the National Council of Educational Research and Training (NCERT) and under its guidance at the state level by the various State Councils of Educational Research and Training (SCERTs) One may more specifically like to highlight the attempts made by these organizations to evaluate the history textbooks from the point of view of promoting national integration.

While one can have no qualms with the fact that the textbooks that our children study should present an objective point of view, and in the process help them in developing an attitude conducive to the promotion of national integration, such an objective should not be seen as an end of the total enterprise of teaching of history History after all, if we believe the noted curriculum specialist Phenix, is a subject which is supposed to help in the personal development of the children and therefore should be concerned with the dramatic mode of recreating the past in order to make it available for sympathetic participation by persons now living History, more than any subject of the school curriculum, should require empathetic responses from the students, identifying with the people, events and incidents of the past In common parlance empathy is taken to refer to 'the ability to put oneself in someone else's shoes or more formally to 'reciprocate positions'. In history the term is usually associated with Collingwood's dictum that 'all history is the history of thought' In this context, one may like to add that among the varieties of history none is more effective in fostering personal development than biography, particularly of exemplary personalities of the past with clear continuity with the students' own tradition.

Does history teaching in our school classrooms measure up to some of these ideals? The reality of the situation is that grim portrayals of history classrooms abound The typical history classroom, to a great extent, irrespective of the fact whether it is a government, private or a public school is dominated by the exclusive use of textbooks and taking of primitive tests in which predominant emphasis is on testing of 'facts'. Even though such pedagogical practices have been so well documented in the research literature relating to classroom interactions, yet we all as educators and parents are helpless, first-hand witnesses of such an existing malicious situation. One may even harbour the risk of stating that history teaching is possibly no exception to this mode—our whole classroom teaching, as we know it, is strongly dominated by the exclusive use of textbooks and therefore 'for all practical purposes' as Krishan Kumar of Delhi University has observed, "the textbooks themselves form the curriculum" Such a stand may be justified by some who would propose that the knowledge of subject-matter which is embedded in the textbooks is central to teaching But then the expert knowledge of content is not the sole determinant of good teaching.

History that is taught this way by the one-dimensional pedagogues, is bound to remain static, dull and thereby limit the frontiers of rational, non-linear thinking and secular inquiry If this is going to be the resultant outcome of the teaching, then one may seriously question the very belief that once we have freed the textbooks from all the possible ills, the task of preparing unbiased future citizens is going to be much easier. Over a period of time we seem to have "ignored the fact that pedagogical traditions have their own hidden agenda, and that the content of textbooks is only a part of the overall cultural ethos of educational institutions" There is in fact a great need for taking a serious look at what is really happening 'inside' our classrooms. Our priorities seem to have been merely restricted by developing an 'ideal' curriculum and textbooks and forgetting all about what is happening to these in actual classrooms.

If this is so, then what sort of teaching should take place in our classrooms? To begin with there is a need to perceive history and history teaching as a process, laying much less emphasis on the content to be learned and more on the process of learning By transferring the emphasis from content to skills, history is not jettisoned, the syllabus is to be ordered in such a way that the content becomes less dominant. In place of purely chronological presentation, the content can be considered from the point of view of significant problems or themes To teach the subject through the medium of a series of particularised problems, it is believed, would lead students into the methodology of the historian and help them, "to understand people of the past better than they understand themselves"

Such an approach to teaching has come to be termed as an inquiry approach. The underlying assumption of this approach is the necessity to teach history as a 'mode of inquiry', rather than as a 'body of knowledge' Through it, the young and developing mind is led to find and acquire information, perceive relationships and draw conclusions The student is thus initiated into learning the craft of the historian and comes to think historically and not merely to regurgitate data and ready-made conclusions. However, it is not expected that a high school student would proceed in his investigation as an historian, for this requires a breadth of experience and knowledge that he has yet to acquire, but he does gain a facility in using, assessing and evaluating evidence in the manner of a historian. Once we introduce such a shift in our teaching, there is a strong possibility that we may obviate the much talked of 'curriculum load', if not physically but at least cognitively from the minds of the students Added to this, such an alternative approach would facilitate the process of 'learning to learn' rather than to memorize a good deal of factual knowledge which results in students often believing that history, which is otherwise a lively subject, is boring and constitutes the least relevant subject in the school curriculum

After all why do students perceive this subject in this way? Perhaps, what is missing for the student in a study of history is description? dialogue? realism? A human quality? All of these things are often missing in written or lecture-type presentations about people and events distant in time and place In order to make teaching of history lively, drama can create the opportunity for a varied learning experience Students begin to perceive that history is about people no matter what the time, place or cultural setting They begin to see themselves as part of the ongoing process of history. It elicits emotions and causes student to take sides, invest their feelings, and become more involved with the past Through drama the teacher can present a societal issue from a variety of perspectives

While it is always easy to pick faults, criticise and sermonise, the existing situation would improve only if a conscious attempt is made to ensure and develop a conviction amongst the practising teachers to go in for alternative strategies of teaching. Mere conviction may also not, perhaps, help, what would be required is, that the practising as well as prospective teachers, be exposed intensively to such alternative teaching strategies

Another important issue that is linked to making these alternative strategies successful is that of evaluation of learning outcomes As long as our evaluation procedures remain exclusively dominated by measuring of only cognitive learning, not much change can be expected What is required is that the teachers in addition to measuring the cognitive outcomes should be encouraged to assess vital outcomes such as attitudes, interests, values and imagination If history has to retain the 'muse' for which it is well-known, then it must equally develop and test the emotive aspects of the learners. There is a strong need to base our priorities on the issues such as mentioned above and only then can we have some meaningful teaching of Clio in our classrooms

As such, the situation as it exists, nobody seems to be concerned about all this For the University Departments of Education to research or to look into issues such as these is like touching a blob of cow dung, too much beneath their academic status The Colleges of Education in this country, by and large, are 'areas of darkness' in which deadwood has never been considered a hindrance and, therefore, to expect that some new thinking would emerge from these institutions would amount to wishful thinking But the challenge has the potentiality and is worth taking Who will take it up is the question

# Role of Induction Programme in Teacher Effectiveness

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*Qualitative improvement in an educational system largely depends on the quality of its teachers. Gone are the days when only born teachers were inducted into the job. Today with the expansion of the system in both quantity and variety large number of teachers with varied background have entered the profession without adequate and sufficient professional preparation. Seen in this backdrop the 'Induction Programme' as suggested by the author in the present article gains much significance. However, dedication and commitment of the head of the institution are crucial in the whole exercise.*

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EDUCATION in general and school education in particular should be quality-oriented since only quality education can make people useful, productive and prudent. The virtues of quality education have been recognised by all.

The policy-makers in India have also recognised the crucial role it plays in the development and modernization of the nation. Therefore, during the post-independence phase, the Government of India initiated various programmes in order to improve the quality of education. Most of these programmes were conceived and initiated with two specific aims. First, to spread literacy and numeracy and second to improve the quality of school education. These twin aims are reflected in the schemes of universalisation of elementary education, integration of content with pedagogy at the college level, vocationalization of education, preparation of model textbooks and prototype educational kits, science and mathematics education for all for the first ten years of schooling, computer literacy and studies in schools and setting up of Navodaya Vidyalayas, etc.

## The Agents of Quality in Education

There has always been a strong link between the quality in education on the one hand and the three T's, i.e. textual material and teaching aids, teacher training and finally the way teaching and testing is practised in the educational and training institutions on the other. The task of quality improvement in school education not only involves proper education but also proper training to those involved. Different people involved at different levels require different types of competencies Because of the information revolution, knowledge is expanding at an exponential rate and its volume almost doubles every decade Therefore we need such people who can keep pace with the changing times Hence, they need to be provided in-service education and training.

The teachers constitute the largest section of the whole education system They also occupy the most important place so far as quality is concerned So, any effort at improving the quality of education would mainly depend upon the quality of teachers. The Kothari Commission (1964-66) states "... of all the factors that influence the quality of education .., the quality, competence and character of teachers are undoubtedly the most significant" The National Policy on Education 1986 and the Programme of Action 1986 and their 1992 revised versions have also echoed the same views Therefore, the teachers require special attention in terms of their education, training and development, so that they can perform their duty properly In December 1993, the Government of India through the National Council for Teacher Education Act established a statutory body called the National Council for Teacher Education. This body has been assigned the task of regulating and monitoring the quality of teacher education and training besides controlling and preventing its commercialisation.

## Competencies of a Teacher

An educational institution has mainly two types of assets—physical assets, i e buildings, machinery, stores, vehicles, etc. and the human assets The human assets in contrast to physical assets, become more and more valuable for the institution as they grow in age and experience The teachers being the most important and valuable resource add value to their worth in terms of enhanced subject knowledge teaching skills and experience With the adoption of reforms in economic policies and consequent liberalisation the competition will hot up and merit and skills will dominate the market Education will also follow suit and only the updated and efficient teachers will survive The teachers are therefore, required to gear themselves up for the rapid changes

Teaching as a profession requires many competencies such as communication skills, inter-personal skills, knowledge and understanding of the subject-matter, understanding of the psychology of the learners, learning theories and teaching skills, etc. Out of all these, knowledge and understanding of the subject-matter and teaching skills have been recognised as the two most important ones. The basic educational qualification in the subject concerned followed by pre-service training have been assumed to have served the purpose of developing the competence required. These assumptions are ill-founded and the consequent results have been discouraging

It has now been realised that the complex competencies required for an effective and successful teacher cannot be developed through pre-service training alone. It has to be supplemented by practice teaching Although the pre-service teacher training does have a provision for practice-teaching, in most of the teacher training institutions there is hardly any actual practice. The pre-service teacher training tends to develop teaching skills amongst the prospective teachers. The teaching skills can be developed through a combination of knowledge and on-the-job training. Integration of teaching aids with the instructional material may help in acquiring teaching skills faster And with these newly acquired professional skills a teacher gains immense self-confidence and self-esteem They start accepting greater challenges and responsibilities which ultimately make them successful

## What Ails the Teaching Profession?

Despite pre-service training, the professional teachers differ in their approach, involvement and commitment from other professionals working in commercial, industrial and other service sector organisations The reasons could be many and varied such as poor quality and short duration of training, lack of support from the peer group and their professional organisation Another equally important reason behind this gloomy state of affairs is that more often than not only left-overs join pre-service teacher training institutions not out of choice but ou[illegible] Further, most of the c[illegible] services, Public Sector Undertakings and Industrial Establishments have a planned formal and structured induction programme followed by an on-the-job training and development programme for their new employees. These features are altogether missing in the case of teachers Hence a sort of Induction Programme needs to be introduced so that teachers can succeed in their motive of imparting better education

## Meaning and Objectives of Induction Programme

A person after being appointed as a teacher faces problems which he never came across earlier. His initial days in the school are characterised by anxiety, doubt, fear, tension, apprehension and lack of confidence This is primarily because of an alien environment, changed duties and responsibilities In this situation the new teacher requires support, assurance and guidance till he/she finds him/her own niche. It is at this stage that the Induction Programme will help him/her In the case of educational institutions 'induction' or 'orientation' is a process of introduction and familiarization of new teachers with the new institution, their specific tasks, their colleagues and community for their effective and comfortable functioning It marks the beginning of the socialization and professionalization process of the new teacher It is the period of adjustments in which the new teacher learns what is expected from him/her in terms of appropriate behaviour and professional performance An Induction Programme should become a channel through which the traditions, conventions, basic philosophy, policies, rules and procedures along with values associated with the institution is communicated. Actually the whole Induction Programme should be conducted with the main objective of providing help and guidance to the incumbent teacher for his/her smooth academic, social and functional integration with the institution as early as possible so that he/she becomes an effective teacher contributing to the overall growth of the institution

The responsibility of conducting the Induction Programme should normally be shared by the head of the institution with the assistance of other colleagues and supporting office staff. An Induction Kit in the form of print and non-print materials may be developed to supplement the verbal induction The programme may extend over a period of ten to fifteen working days. Towards the end of the programme the teacher should be given on-the-job practice and feedback in the form of counselling so as to boost his morale and confidence. The Induction Programme plays a crucial role in developing a healthy work attitude as well Finally, one may say that 'induction' is the guided adjustment of a new teacher to the institution, the work environment and the job for his/her success in the career and satisfaction in the job

## Assessing the Induction Programme

Assessing or evaluating the value or worth of the 'Induction Programme' forms an integral and important component of the whole programme It provides necessary feedback so that the programme may be modified and strengthened if required Assessment and evaluation include assessing the effectiveness of the teacher

The process of evaluation should include the opinion of the new teacher and of the team involved in conducting the programme The areas to be evaluated should include evaluation of knowledge gained, skills acquired, change in attitude towards the profession and improvement in work habits. The evaluation process should be a protracted affair using written and oral tests, interviews and feedback from the students. The feedback and information thus received need to be analysed and used in finding out critical areas, strengths and weaknesses so as to make use of them for revising the methods, content and duration, etc of the programme

In the absence of an Induction Programme the new teacher may get disoriented. Introduction of an Induction Programme in educational institutions will go a long way in developing successful teachers, fully equipped with necessary skills to make learning enjoyable for students. The head of the institution should be entrusted to implement a formal and systematic Induction Programme and its follow-up activities. It generates enthusiasm and provides motivation towards a good performance besides helping to establish a feeling of teamwork. It will have to be focused providing strategic direction and clear objectives Thus it will solve a host of problems arising out of maladjustments and the teachers will fit in the institution The institutions also need to develop a culture of clarity and transparency in work-related matters to foster mutual confidence, trust and self-esteem among the colleagues working in the institution

A very important and critical element for achieving success in an induction programme is the commitment and involvement of the chief of the school and the chemistry between him/her and the persons responsible for running the programme. To launch an Induction Programme without the dedication and commitment of the chief would be devoid of any expectation but instead would generate frustration

# Developing Learning Material for Literacy and Continuing Education

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*These days much stress is being laid on spreading literacy and organising continuing education programmes for adult learners In both these endeavours follow-up of the learners becomes very important They should be provided a variety of materials—both print and non-print—not only to sustain their interest but also for giving them information useful for their life needs In the present article the author has underlined the role of audio-visual learning materials in this context.*

LITERACY programme has been in existence for over 48 years in this country but the limited impact it has had, indicates that there are some basic problems which need to be identified and understood. The basic problem may be in terms of motivation and the long-term interest of the learners, methodology of teaching, the kind and the quality of educational materials for teachers and learners and perhaps many more Other problems relate to evolving alternative strategies for curriculum development, preparation of teaching aids, evaluation and follow-up These problems may differ from one part of the country to another

There has been an unprecedented growth of population and expansion of knowledge and along with this there has been a substantial increase in the number of schools but even this number has been offset by the explosion of population. New methods and materials have not kept pace with the tremendous explosion of knowledge in technological, scientific and other areas. There is a problem being faced because of the heavy rate of drop-outs and those who never enter the school It is thus obvious that education can no longer be confined within the four walls of the school. Education has to be provided in a variety of ways both within the school and outside the formal system with the active involvement of the community

Effectiveness of the programme can be gauged only in relation to the benefits that have resulted from the learning process.

The follow-up is very important both in terms of the learning needs for development and for literacy and continuing education. An aspect that has to be emphasized is the need to link literacy and education with social needs There is also the need for humility on the part of the teachers and to make education a genuine, two-way learning process There is much to be learnt from the learners and this has to be conveyed to them to make the group participate more actively. Teaching methods and materials, as far as possible, should be related to the learner's needs and cannot be standardised Inexpensive local materials need to be utilised.

We have the third largest manpower trained in science and technology in the world The Ramamurthy Committee on the review of National Policy on Education recognised that education is an investment in terms of human beings and that this asset needs to be strengthened with an element of dynamism Each individual is important and his dignity and contribution should be fully recognised and appreciated in the new educational system The emphasis has to be placed on learning rather than on teaching. It should be activity-based, innovative and exploratory

## Curriculum Rationale

The curriculum should be framed taking into account all the aspects of human life Core curriculum elements including moral and spiritual values, work experience, national integration, etc must be incorporated in it Other than being regular in attending classes everyday, one should ensure that pictures, flip charts, models and film strips, etc. are used judiciously so that students' retention capability increases and teaching became a more effective and joyful experience. It is difficult to apply a uniform approach to all The teachers and instructors should have the freedom of evolving a curriculum with the minimum amount of classification and codification. The amount of interaction is determined by day-to-day needs. Curriculum has therefore to be ultimately redrawn and redefined Whether it is classroom teaching, out of the classroom interaction or non-formal education, the content has absolutely no meaning till it has been linked to a tangible result that can be seen Core curriculum areas may be common and compulsory for all, but there has to be a built-in flexibility in transaction The devices used for transaction may differ from one place to another and even from one region to another in a state

The teaching methodology may be linked to the learning needs of the group Literacy is to be treated as an input The dissemination has been purely of a technical nature so far The need is to classify the information in a manner in which it can be tabulated so that the same could reach the people easily For instance, in the case of programmes on physical education and health, it is easy to reach out to the vast number of people through village level health workers programme and the curriculum development has to be drawn in consultation with the village level health workers, the community and the specialists

The role of audio-visual materials in learning also becomes important Because such materials enrich the visual and audio experiences of the learner It is essential to take up the tasks of building resources to support the curriculum

India has a rich tradition of art and culture. Indigenous toys and games developed and available in the villages can significantly contribute to the teaching-learning process if organised systematically If only one could motivate groups of different kinds of people—scientists, engineers, doctors, etc in the tasks of making learning joyful and providing innovative experiences. One could perhaps produce several packages of materials. But there is also a need to enrich the experiences of poor children One has to look closely at the learning situation for every identifiable group of young learners and analyse the situation in terms of learning resources, strategies, processes, practices and outcomes The outcomes of learning in any situation, whether it is natural, improvised or institutionalised, depends very much on the objectives and how these objectives have been translated and brought into the learning exercise of the child. Any analysis of the learning situation should at least include these aspects. Most often the objectives of learning are not clear, neither to the teacher nor to the learner. In order to make learning purposeful and self-motivating, it is necessary to know what the child is to learn and wants to do and then plan the learning experiences in such a way that there is a matching of his expectations

The child is curious about living objects around him including man, woman and himself He soon discovers that there are recurring patterns and stable patterns of human relationships and behaviour. He is curious about animals, society, market, government and so on. There are so many questions to which there is no end. The fact is that the child tries to relate himself to the world around him through his knowledge, activities and feelings

New methods and procedures may be evolved to encourage participation of school children in various activities related to ecological conservation and preservation The children may be involved in these activities through a series of cooperative societies and organisations which could be set up in schools and in the centres of continuing education all over the country in a phased manner. The role of these institutions will be to take active part in disseminating the information gained from various sources among the people in their localities The plan may aim at educating children about their immediate environment and the causes for its deterioration, impart knowledge about the different facets of the eco-system, their interdependence and their need for survival and to mobilise youngsters by instilling in them the spirit of scientific enquiry. Practical knowledge about environmental protection may be imparted through audio-visual aids, posters, quiz programmes, lectures and inexpensive experiments

## Basic Problems

There is a need to evolve a curriculum which is based on the interest of the learners with emphasis on crafts and skills in various occupations The curriculum formulated at the national level with an urban outlook is not going to solve the problems In fact the process of development should be the other way round, i e from the village level to block level, district and to state level One of the basic problems of literacy and continuing education has been the perception of planners that the teacher would carry the programme into the village on the basis of bare skeleton facilities Most of our teachers in the villages specially those who participate in the programmes have to face environmental problems. They require to use different methods and techniques so that the learners are willing to accept new methodology The programme of massive orientation of teachers which was initiated in 1986 needs to be continued with variety and necessary changes so that the teachers could get training in new innovations and ideas.

## Educational Materials and Aids

Besides development of curriculum, educational materials may be prepared and used in which learners and community are actively involved Educational materials have so far remained specific and correlated to immediate issues and capable only for limited circulation Apart from pictures, use of posters, film strips, puppets, *kirtan* groups, *bhajan mandalis* could be very effective in such a situation. The local resources have to be developed and this is something which is lacking in most of our ongoing programmes of literacy and continuing education Surpanches and many other field functionaries are to be treated as very strong and important agents in any educational programme They are to be utilised most effectively for education and learning about new methods and techniques about which the teachers do not have enough information. If these people can be tapped, there will be enough educational resources in the villages to strengthen the educational process Literacy and continuing education should be completed with the objective of establishing classroom links with the community, creating understanding of the needs of the children and ways of meeting them, help people to acquire relevant knowledge and skills and stimulate individual and group action for better living.

Literacy and continuing educational programmes being carried out fail to sustain the interest of the learners who are mainly engaged in day long labour in the fields and on the roads The programme reduces the status of the person in the family and in his immediate environment unless these are based on prestige and support that could be mobilised locally. There is a need for the family approach in which an effort could be made to create a responsible structure in the community where learning has greater success in eliciting participation and adoption of new practices. Literacy and continuing educational programmes can make a dent only if they are relevant to the needs of the learners They should be related to the solution of problems centred around the new world and the examples quoted should be from the area of health, agriculture, environment and the vocations Formal instruction or bureaucracy above cannot tackle this problem It needs to be supplemented by the efforts of voluntary organisations, community and motivating individuals and groups Imparting education of any kind is not easy Even in ordinary formal school education, teaching alphabets is a difficult task It needs much more analysis while dealing with problems of sociology and economics in the rural areas. It has to deal with marginal farmers, landless labourers and their children and naturally the entire motivational complex is related to this problem. One has to understand what kind of motivation can possibly be utilised so that the literacy programme can succeed

Perhaps along with the textbooks and teacher's guides, it is very essential to preplan the preparation and utilization of teaching aids by involving the learners and communities so that both participate in the processes actively. While at the primary level, in order to keep the interest of the learners, one can propose to prepare programmes based on dramas, games, and other related activities, it is essential to carry on experiments and explore ways and means in the area of literacy and continuing education For instance, while finalising the scheme, the idea of raising finances for the development of the village can be mooted by suggesting various options which are available in the village so that learners could judge by themselves as to whether the loan from the *Sahukar* or cooperative bank should be taken and which option shall be beneficial for them Similarly consequences of taking loans for non-productive purposes would amount to be going into the mouth of snake in a game of snakes and ladders, which could be developed for the programme

If simple graphic teaching aids in the form of models of real things are designed in collaboration with the village artisans, teachers and learners, the difficult concepts in science and mathematics can be easily comprehended. The school system has neither any teaching aids nor the funds to purchase any aids. There is also a question of maintaining the aids for lack of proper storage facilities. The system seldom encourages the use of such aids Teaching aids in the present situation have a very low priority though these help to promote learning by actual participation There is a need to devise ways and means to motivate the preparation of improvised teaching aids and earmark a time slot for their planning and preparation Learning activities can be planned while considering their necessity and relevance The learner feels interested only when activities involve identification of difficult concepts. The aids and activities would help to solve the basic problems of drop-outs and adult literacy skills effectively Permanent tools for lifelong learning and for facing some of the immediate situations in life are areas where literacy is indispensable. Equal emphasis should be laid on both the aspects of the programme, i e conscientisation and alphabetisation. There should be ample stress on the training of teachers and they should be taught to make use of the educational materials being provided to them. A training programme for teachers must be initiated at different levels Since it is difficult to train all the teachers at one central place at the same time, it is suggested that teacher trainers be employed at different levels Since the role of these teacher trainers is in no way insignificant, it is suggested that they be given a kind of orientation on how to train the teachers and also how to make the best use of the teaching aids Naturally the orientation programme should be as informative as possible

# Effectiveness of Advance Organizer Model in Teaching

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*The growing concern for improvement of teaching competencies of prospective teachers led to several innovations like behaviour modification approach, interaction analysis, micro-teaching and the development of models of teaching Theoretically speaking it is desirable to train the teachers in all the models, but in practice there is a need to select models of teaching which would be applicable, functional and workable in the Indian situation These are to be acceptable to teacher educators and teachers. In the present paper the author has tried to assess the effectiveness of the Advance Organizer Model in teaching and has come to the conclusion that the Advance Organizer Model appears to affect the learning of students of differing abilities in different ways*

COLLEGES of education at the elementary as well as at the secondary level in India and in other parts of the world have been founded on the premise and perpetuated in the hope that the 'ability to teach' can be taught. It was assumed that those who possess an adequate mastery over the subject can become effective teachers through the teacher education programme Also, those who fortunately possess a certain inborn talent for teaching may also profit from the same.

The word 'teach' has a long history and its use has varied from one period to another From early times it has been associated with the word 'learn' In Shakespeare's *The Tempest,* Caliban explains: "you taught me language, and my profit on it is, I know how to curse, the red plague rids you, for learning me your language". Both 'learn' and 'teach' are used by Caliban to mean the same. Smith (1961) described the word 'teach' as having a long history. From early times it has been as-

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ciated with the word 'learn' 'Learn' or teach 'Lernen' is derived from the Anglo-Saxon 'Leornian', the base of which is 'lar', the root of 'lore'. 'Lore' originally meant learning or teaching, but is now used to mean that which is taught, specially traditional facts and beliefs

In the field of learning, a number of theories have been developed by researchers Recent works of Piaget, Bruner, and Ausubel have made further significant contribution to this field. However, the field of teaching has relatively been neglected by researchers, as a result there is hardly any theory for teaching Gage (1963) explains that the relative neglect of theories of teaching has probably taken place because it may be in the minds of researchers that if there is a satisfactory theory of learning, then the teacher can act upon that theory for teaching in the classroom Teaching is thus viewed as a mirror image of learning.

It is generally argued that there is no need for a separate theory of teaching since there are already theories of learning and development A teacher can always act upon these theories for teaching children in the classroom. There is no doubt that some implications for teaching have been drawn from theories of learning and development but these theories are inadequate for the development of a theory of teaching and maximising learning on the part of pupils Further, it is mentioned that theories of learning and development, are descriptive in nature (Bruner 1966). A theory of teaching, on the other hand, is prescriptive. It is prescriptive in the sense that it sets forth rules concerning the most effective ways of helping children to achieve knowledge and skills A theory of teaching must attempt to set forth the best means of maximising learning on the part of children.

Gage (1963) mentions two kinds of theories of teaching The first one explains why teachers behave as they do in teaching The second kind of theory explains how the behaviour of a teacher can influence learning of pupils It is quite clear that teaching and learning are integrated terms. Theories of learning and theories of teaching are inter-dependent rather than mutually exclusive (Ausubel, 1968, p 14) These are two sides of a coin. In the absence of one, the other cannot function The most important purpose of teaching is to make the learning permanent through utilising its best techniques, and devices. It is true that teaching is a process by which the teacher and students create a shared environment including sets of values and beliefs which in turn colour their view of reality. Marootunion (1967) emphasised that the teacher must learn to control five processes of teaching (i) making and using knowledge, (ii) shaping the school, (iii) teaching with strategy, (iv) creating interpersonal climates and (v) controlling a teaching personality Under the theory of instruction, Bruner (1972) asserted four major steps for making teaching effective. (i) predisposition toward learning, (ii) structured body of knowledge, (iii) sequences of material to be learnt and (iv) the nature and pacing of reward and punishment.

In the absence of a theory of teaching the question arises as to what procedures a teacher should follow in the classroom? Should he be allowed to develop a teaching style that works in his work situation and stick to it for all time to come? The obvious answer to this question would be that we should not allow such things to happen in the interest of our students It is true that no theory of teaching is available as yet, but there are a number of models of teaching which have been developed by researchers to realise specific instructional goals Models of teaching are prescriptive teaching strategies (Eggan et al , 1979)

## Models of Teaching

Joyce and Weil (1972) have done a great service to educational practice by developing the models of teaching from a number of learning theories. Since these models of teaching were stated more explicitly and were directly useful for classroom purpose, they attracted the attention of educational practitioners.

The term 'model' seems to be one of the most ambiguously used in the literature on education Brodbeck (1963) lamented that "model is now frequently used for those theories which are either highly speculative or quantified or, most likely, both" and Hyman (1971) pointed out that, "these two words, theory and model, often are used interchangeably". The dictionary meaning of the word 'model' is a pattern of something to be made or reproduced, and a means of transferring a relationship or process from its actual setting to one in which it can be more conveniently studied From the point of view of teaching, "a model of teaching consists of guidelines for designing educational activities and environments It specifies ways of teaching and learning that are intended to achieve certain kinds of goals A model includes a rationale, a theory that justifies it and describes what it is good for and why, the rationale may be accompanied by empirical evidence that it 'works'. A model of teaching is a plan or pattern that can be used to shape curricula, to design instructional materials and to guide instruction in the classroom and other settings. Weil and Joyce (1985) organized models of teaching into four families These are as follows

### *Information Processing Models*

The information processing models are concerned with organization and presentation of verbal and non-verbal symbols in a way that helps in the formation of a concept, solution of a problem, development of social relationship and integrated personality Some of the models of this family are Scientific Inquiry Model by J. Schwab, Concept Attainment Model by J Bruner, Advance Organizer Model by David B. Ausubel, etc.

### *Personal Models*

The personal models are intended to develop the unique personality of the learner These models pay more attention to the emotional life of the person and also focus on helping individuals to develop a productive relationship with their environment Some of the models of this family are Non-directive Teaching Model of Karl Rogers, Synectics Model of William Gorden, Classroom Meeting Model of William Glasser, etc

### *Social Interaction Models*

The social interaction models are concerned with the social relationship of the individual with others in society, the development of mind, and the learning of academic subjects Some of the models of this family are, Group

Investigation Model of Herbert Thelan and John Dewey, Role Playing Model of Shaftel and Shaftel, etc

*Behaviour Modification Models*

Behaviour modification models indicate systematic plans for sequencing learning tasks and changing behaviour by conscious manipulation of reinforcement Some of the models of this family are Contingency Management Model of B F Skinner, Self Control Model of B F Skinner, Desensitization Model of Wolpe

The common denominator of all the models of teaching is that each attempts to achieve a deliberate instructional goal based on a specific belief about the nature of the child and, most importantly, each suggests a sequence of general participant actions to facilitate learning or produce pupil cooperation in activities that appear to produce learning Most of the models of teaching serve as simplifying metaphors to reduce the fantastic complexity of human interaction as it occurs in the classroom. A model provides the answers to the following four questions

1 What do we want to know?
2 How will we describe what we see?
3. How often will we look?
4 How many variables will we use at the same time?

A good model is one that accomplishes its purposes with the fewest limitations It specifies what is to be identified in the continuing flow of behaviour, it predicts how those things probably are related and its most important function is to show how all these separate things can be put back together (Dunkin, 1987)

Each model has five concepts for its description· (i) Orientation provides theoretical background of the model, (ii) Syntax includes sequences of events or phases of the model, (iii) Principles of reaction indicates the mode of teachers' responses to students' activities, (iv) Social system signifies the norms with regard to student-teacher roles and relationships, and (v) Support system refers to additional requirements beyond the usual human skills, capacities, and technical faculities to implement the model

## Advance Organizer Model

Herbart, the nineteenth century philosopher, expressed that the teacher should not present anything completely new to the students. In the method of teaching, Herbart included five interlinked steps (a) Preparation, (b) Presentation, (c) Association, (d) Assimilation and (e) Application (Ebel, 1969) He must provide the students with connecting links to what has been previously taught This should be done bit by bit to widen the student's circle of thought taking careful account of the precise structure of that particular child's mind at each point In a subsequent consideration of the introduction of new materials, it is pointed out that new ideas must have a point of connection with the existing experience of the student and that it is probably impossible to acquire new ideas or abilities without connecting links. New materials should be introduced to students with a sketch containing the essence of the matter with a minimum of detail. David P Ausubel, in his theory of meaningful verbal learning advocates the use of advance organisers. The Advance Organizer Model is designed to strengthen students' cognitive structure. Cognitive structure means a person's knowledge of a particular subject-matter at any given time and how well organised, clear and stable it is The principles of progressive differentiation and integrative reconciliation are used to organise learning material in such a way that the concepts become a stable part of student's cognitive structure Progressive differentiation means that the most general ideas are presented first, and then these are progressively differentiated in terms of detail and specificity and new ideas are consciously reconciled and integrated with previously learned content in integrative reconciliation In the actual teaching situation, the primary way of strengthening cognitive structure and enhancing retention of new information is through the use of advance organizers Ausubel believes that learning from meaningful verbal learning can be facilitated by providing the student with advance organizers which help the student to integrate the new material into his existing cognitive structure. The organizers compare and contrast the new material with what the student already knows

An advance organizer is a complex set of ideas or concepts that is given to the learner prior to the material actually learned Chapter titles and section headings in a text are the examples of advance organizers As such they serve (presumably) to indicate to the reader what the succeeding content is, and, in some cases, how it relates to other content In the same way, introductory paragraphs frequently contain no new material, but serve instead to remind the learner of certain ideas that are important in terms of their relationship to the new material "Advance organizers consist of introductory material at a higher level of abstraction, generality and inclusiveness than the learning task itself" They serve to provide specifically relevant anchoring ideas for the more differentiated and detailed material that is subsequently presented Advance organizers are generally based on the major concepts, propositions, generalization, principles and laws of discipline Basically, an advance organizer functions in two ways

First to provide stable cognitive structure to which the new learning can be anchored and second to increase recall (prevent loss of dissociability) The advance organizers are used in two circumstances. The first is when students have no relevant information to which they can relate the new learning The second is when relevant subsuming information is already present but is not likely to be recognized as relevant by the learner

## Characteristics of Advance Organizers

Advance organizers generally have five characteristics which are as follows·

1 Short set of verbal or visual information.
2 Presented prior to learning a larger body of 'to be learnt information'.
3 Containing no specific content from the 'to be learnt information'
4 Providing a means of generating logical relationship among elements in the 'to be learnt information'
5 Influencing the learner's enclosing process.

## Types of Advance Organisers

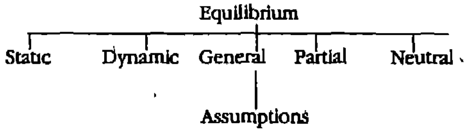
Ausubel described two types of advance organisers. One is used when the learning material is completely novel, and the other is used when the learning material is somewhat familiar The first is termed as an expository organizer since it presents a description or exposition of relevant concepts The second is termed as a comparative organizer since it is likely to make use of similarities and differences between new material and the existing cognitive structure

## Guidelines for the Formulation of Advance Organizers

In formulation of advance organizers, the following should be kept in mind.

1 It should be a higher level of abstraction, generality, and inclusiveness than the learning material
2. It should explore the essential features of the concept (or proposition).
3 It should overview all major similarities and differences between issues and new ideas before they are encountered.
4. It should provide examples.
5. It should link the students' previous background or experience to the organizer.
6. It should emphasize the terminology of language of the concept or proposition.

## Diagrammatic Presentation of Advance Organizer



- Tastes and incomes of the consumers are constant.
- Perfect competition in the commodity and factor market
- Perfect mobility of factors of production.
- Constant return to scale
- Operation of all firms under identical cost conditions.
- No changes in the techniques of production
- Full employment of labour and other resources

## Description of the Model

The Advance Organizer Model of teaching is described in different steps which are as follows:

(i) *Syntax* This model consists of three phases.

*Phase I Presentation of Advance Organizer*

In this phase, first of all, the objectives are clearly formulated and later, the advance organizer is presented

*Phase II: Presentation of Learning Task or Material*

In this phase, the learning material is organized in logical order and presented through lectures, films, scripts, discussion, experiences, extra reading material, etc. Attempts are made to maintain motivation and interests.

*Phase III: Strengthening Cognitive Structure*

In this phase, the new learning material is anchored with old learning material. Integrative conciliation is brought about by asking the students to prepare the summary of major attributes of new materials, to report definitions, and to differentiate the closely related subjects

(ii) *Social System*

In this model, the teacher retains control of the intellectual structure as it is necessary continually to relate the learning material to the organizers and to help students differentiate new material from previously learnt material

(iii) *Principles of Reaction*

The teacher's solicited or unsolicited responses to the learner's reactions are to be guided for the purpose of clarifying the meaning of the new learning material, differentiating it from and reconciling it with existing knowledge, making it personally relevant to the student and helping to promote a critical approach to knowledge

(iv) *Support System*

Well organised material is the critical support requirement of this model. The effectiveness of the advance organizer depends on an integral and appropriate relationship between the conceptual organizer and the content

(v) *Instructional and Nurturant Effect*

The instructional effects of this model are conceptual structures, meaningful assimilation of information and ideas. The model nurtures an interest in an inquiry and precise habits of thinking.

(vi) *Application of the Model*

The model has the following applications at different levels

1. The Advance Organizer Model is especially useful to structure extended curriculum sequences systematically in the key ideas of a field.
2 It increases the learner's grasp of factual information linked to and explained by the key ideas
3. The model develops the skills of effective reception learning
4. The model is useful whenever ideas or information are presented or clarified
5. In this model, the activities designed to strengthen cognitive organization can be spontaneously applied to the clarification of ideas in whatever instructional context they appear

## Effectiveness of Advance Organizer Model

The ultimate purpose of any teaching strategy is to make the learning permanent in the cognitive structure of the learner In information processing models of teaching, the advance organizer model has a wide application at different levels of schooling in various subjects On the basis of the findings of the various research studies conducted in India and abroad, this model showed its effectiveness in different teaching subjects at various levels as under

*Abroad*

The Advance Organizer Model is applicable to all grade levels of the learner and facilitates learning making it more permanent. However, this model is more applicable at higher grade levels of schooling (Ausubel, 1960; Ausubel and Fitzgerald, 1961, 1962, Neisworth, 1968, Grotelueschen and Sjogren, 1968, Allen, 1969, Weisberg, 1969; Steinbrink, 1970 and Anderson, 1973, etc.).

The Advance Organizer Model could be utilized in teaching of any subject during instructional process to make teaching more effective, and ultimately that results in making the learning more permanent This model is more applicable to subjects like social studies, science and mathematics, etc.

(Ausubel, 1960; Ausubel and Fitzgerald, 1962, Groteluescher and Sjogren, 1968, Allen, 1969, etc.)

The ability of the learner affects acquisition of various concepts of any subject in the teaching-learning process The Advance Organizer Model has significant effect on retention of learning specially when this model is utilized to teach the high ability students rather than that of average and low ability learners (Allen, 1969, Johnes, 1974; Anderson, 1983; Lavington, 1984, etc.)

Intelligence may be regarded as a sort of mental energy in the form of mental or cognitive abilities in terms of adaptation and facing novel situations as effectively as possible. It plays a significant role in achievement of the learner The Advance Organizer Model has a consistently significant effect on achievement of above average learners than that of average and below average learners (Allen, 1969, Dena, 1980, etc.)

Motivation is regarded as something which prompts, compels and energizes an individual to act or behave in a particular fashion at a particular time for attaining some specific goal or purpose The Advance Organizer Model has a facilitative effect on learning when it is utilized with a motivational introduction of learning material to be presented before the learners in the classroom (Neisworth, 1968, Murchison, 1975, etc.)

Although the Advance Organizer Model does not facilitate comprehension of single theme texts, it facilitates comprehension of multi-thematic texts. It strengthens retention of concepts and has significant effect on below level, at level and above level readers (Kneen, 1979, Dena, 1980; Lewis, 1986, etc).

The carry-over of habits of thinking, feeling or working, of knowledge or skills, from one learning area to another usually is referred to as the transfer of training (Crow and Crow, 1973) The Advance Organizer Model enhances learning transfer to problem-solving situations when the learning material is presented in a sequenced manner (Grote Lueschei and Sjogren, 1968 and Noel, 1983, etc)

Achievement is an accomplishment or production of the pupil in a particular school subject or field Advance Organizer Model has significant effect on achievement whenever it is utilised to teach the learners (Allen, 1969, Weisberg, 1969, Maher, 1975, Kneen, 1979; Darrow, 1980, Dennis, 1984, Morgan, 1983, etc.)

Learning set consists of two elements namely warm-up and learning to learn These components refer to the readiness and willingness of learners to learn a subject in a meaningful fashion rather than merely in a rote manner One of the possible advantages of the Advance Organizer Model is that it may function as a warm-up component which serves to create a predisposition towards learning materials meaningfully Warm-ups have a short-term effect and account for most parts of the improvement in learning that occurs during a single day (Ausubel, 1960, Ausubel and Fitzgerald, 1961, 1962, Ausubel and Yousef, 1963, Scandura and Wells, 1967; Grotelueschor and Sjggren, 1968, Steinbrink, 1970, Mahajan, 1983, etc).

## *In India*

In India, in the field of models of teaching the first research study at Ph D level was completed in 1983 by Chitriv at Nagpur. In this research study he found that the Advance Organizer Model as well as the Concept Attainment Model were significantly superior to the traditional method, whereas the Advance Organizer Model was superior to the Concept Attainment Model for teaching mathematical concepts to Class XI students. Prose-passage type and pictorial type advance organizers facilitated the retention of life sciences subject-matter even after an interval of four weeks An instructional strategy with a pictorial type of advance organizer was found to be better than the prose-passage type of advance organizer (Ghosh, 1986). The Advance Organizer Model was significantly superior to the traditional method in terms of achievement of B Ed. students in educational psychology (Buddhisagar, 1987). Pandey (1986) found that the Advance Organizer Model was significantly superior to the traditional method in terms of pupil achievement whereas both were equally effective in terms of pupil's attitude towards social studies.

Programmed instruction is a planned sequence of experiences, leading to proficiency in terms of stimulus response relationship. Programmed learning based on advance organizers is effective in terms of achievement of students (Buddhisagar, 1986; Senapati, 1986, etc) Advance Organizer Model has a significant effect on the achievement of students at the level of Classes VIII, IX, XI and B.Ed in teaching of social studies, life sciences, mathematics, educational psychology and educational administration and school organization (Chitriv, 1983; Ghosh, 1986; Pandey, 1986, Buddhisagar, 1987 and Siddiqui, 1991).

Advance Organizer Model appeared to affect the learning of students of differing ability in different ways For below average students, it served to maintain the specific facilitative effect For the above average students it did not maintain a facilitative effect but did result in general enhancement of learning All relevant information pertaining to the age, ability level, sex and socio-economic status of subjects, the content or subject area to be taught, the duration of imparting the subject-matter should be kept in mind while using the Advance Organizer Model in the process of teaching In view of the researcher, there is an urgent need to make more orientation programmes in models of teaching for secondary school teachers to make them fully aware about the new world of teaching-learning process in a teacher education course (Siddiqui, 1993)

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# Beyond Textbooks: Alternate Pedagogy through Story Books

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*This paper attempts to analyse the textbooks used in schools and the entire ethos in which they exist today and explores more humane and child-centred pedagogical alternatives. It is divided into three parts. The first section examines the existing burden on school children. The second explores the relevance of story books as an alternative pedagogical tool and the third section emphasizes the need for a more dialogical and egalitarian relationship between the teacher and the taught by reitrating the views of progressive educationists. The aim of such an exercise is to restore meaning to learning, to make it a joyous, alive and a relevant experience for children and to break the dichotomy between learning within the classroom and learning outside.*

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DOES learning in school necessarily have to be a joyless experience for adequate learning to take place? Well, the answer is obviously 'no' but that is exactly what is happening in schools today.

School occupies an ambivalent sort of a position in a child's life. It is a place where everyone goes, aspires to go or is compelled to go, yet the experiences are neither inspiring nor enriching. The objective here is not to question the validity of schooling or even suggest something as radical as Ivan Illich did in *Deschooling Society* (1970) but simply to suggest alternative pedagogical exercises which would make learning in school a happy experience and thus break the dichotomy between learning within classrooms and learning outside.

The Yashpal Committee Report rightly linked the problem of academic overload or burden to "joyless learning, a situation where a lot is taught but little is learnt or understood". Everyone realizes the problem today but it is an entrenched attitude among teachers, parents, authorities and students alike that this kind of schooling, be it painful or dull, is a necessary evil and that not much can be done about it.

A few innovative exercises which are being carried out in schools today act as mere aids to the existing pedagogical tools without critically analysing their validity. For example, can no knowledge be gained without textbooks? Is the textbook the be-all and end-all of all knowledge? It has been found that even if schools use story books along with textbooks they insert question-answers in them and teach them like textbooks

## Prevalent Burden of Schooling

The school today occupies a kind of authority and legitimacy which is both strange and unquestioned Strange because school today exists in an enclave alienated from the rest of the world Unquestioned because in spite of the fact that it is unrelated to more spontaneous and relevant forms of learning, school knowledge reigns supreme, due to its power to fetch marks in examinations and get jobs in the market

The learning process in school is very superficial and boring Also, knowledge is confused with factual information. All energies and resources are geared towards getting more marks in examinations which leads to mugging of concepts without any in-depth understanding Teachers and students, the main participants in the learning process have no autonomy/choice over what the students learn, its source, the time frame and the manner in which it is learnt The strict academic regimen with emphasis on academic learning, excessive dependence on textbooks, completion of syllabus and examinations, homework and tuitions leave no time or space for students to do things that they enjoy doing All this makes the learning experience a very frightening one for children

The textbook is considered to be the only legitimate source of learning It is often confused with curriculum and children are discouraged to refer to any other book besides it In most cases, they are written by university professors or 'experts' who have little idea about child psychology and actual classroom situation in a school The content and style of the textbook is difficult, boring and facts are presented in a dull and mechanical way Often it is overloaded with information It does not allow the child to think creatively They are usually tailor-made to suit the needs of examinations.

Examinations are an all-pervasive feature of our educational system, that anything the students do including the way they study or even think is oriented to getting more marks in examinations The psychosomatic and psychological problems examinations create for students are innumerable

Covering the syllabus becomes an end in itself That also is done in a shoddy and hurried manner with negligible or little participation of students Seldom does a healthy discussion take place in which students offer their own perspectives or analyses of the problem at hand This is not due to lack of interest on the part of the children but partly due to the subtle power which the teacher exerts over them and partly due to the way a student's role is perceived as passive recipient in the learning process

The so-called 'trained' teachers are trained to teach in a conventional way and they get so used to teaching in a particular style that they resent any change. This is because it threatens their existing security and sense of complacency since they themselves have been taught in a similar way

Another reason for this is that the teachers are also overburdened with allied activities like maintaining the register, setting question papers, making report cards, etc which give them little time or energy to be creative in their actual job of teaching. Michael W. Apple calls it *intensification*, i e a process where work privileges of teachers are eroded due to excessive work pressure and there is no time to relax and keep up with one's field Thus for the overburdened and frustrated teacher, the only place where his/her control can be exercised is in the classroom Krishna Kumar calls such teachers 'meek dictators'.

The school boundary is clearly marked out from the rest of the world. 'Don't talk', 'Don't fool around', 'take your studies seriously' and many such comments are constantly bombarded on the students 'If you want to fool around, go outside the school,' etc. clearly indicate to the child that school is a place where one has to suppress one's basic nature One cannot have fun in school 'Studying' and 'enjoying' are mutually isolated from each other The idea of fun is strictly divorced from studies An old Hindi film song succinctly states this

*Padoge-likhoge, to banoge nawaab*
*Kheloge-kudoge, to hoge kharab*

Whereas outside school, watching TV, playing, reading story books of one's choice give the child a lot of joy It is understood that reading stories is an immensely pleasurable activity for children and at the same time enriches the child's knowledge Why can't story telling be used in school as well? Why can't learning in schools be as happy, simple, easy an affair, as reading stories is This question brings us to the second section of this paper.

## Stories as a Source of Learning

Story books occupy a dismal position in a competitive, materialistic and intensely mobile society like ours, where our education system also caters to and reinforces such an ethos and where so much sanctity is attached to textbooks A frivolous, non-useful, non-utilitarian sort of a meaning is attached to them Children are often forced to read what their parents or teachers consider to be fit for them to read

We seem to be obsessed with textbooks and cannot think beyond them It is the textbook as written and used today which is the real menace It is these prescribed, glorified textbooks whose supremacy needs to be questioned Stories could play an important role in creating a world which is more sensitive, open, child-centred as opposed to an alien, closed and rigid structure that it seems to be for the child. Teaching in class is basically a communication process between the teacher and students There is no reason why it should be one-sided, authoritarian and closed The idea should not be to belittle and humiliate children by proving that they know nothing or know less or assert the supremacy of the teacher or textbooks

A story does not merely exist in a vacuum. It is borne out of real life experiences It is not something out there, an alien being, but very much a part of us, something with which we can strongly identify ourselves. The entire exercise of story telling is very dialogical, participatory and active in nature The reader plays an important role in reading. It demands his full concentration and involvement It is not a passive activity in which the reader is just being exposed to stimuli to which he is passively reacting or not reacting at all. Story books cannot be quantified in terms of the value they have so they do not enjoy a similar status

Apart from the fact that stories make for interesting reading and fascinate readers of any age-group and enrich knowledge in so many ways, they could also be used as a medium of instruction in schools especially at the primary level

Story telling is a very effective way of getting messages across and communication becomes much easier Ancient Indian classical texts which have tried to teach moral values to students have relied on the story as a medium. For example, the very origin of *Panchatantra* tales lie in the fact that Vishnu Dutt, their author, created them to educate the sons of a king when all other traditional methods to educate them had failed. Rather than drilling 'do's and dont's' into their heads by force, the same things can be said in such a way that it does not impose/force itself on the reader.

It is often seen that children ask adults to tell them stories the moment they meet them It is important to first catch the child's attention and make things simple and a fun for him before introducing him to the rigours of academic training.

Most of the classical Indian tales (stories by Vivekananda, *Bikram aur Betal*) either consciously or subtly try to convey moral or other messages (*Katha sarita sagar*). These stories have great potential in terms of stereotypes they reinforce or break Values like humility, honesty are even condemned and wickedness, deceit, greed, pride, etc. often condoned

Some stories are a sensitive portrayal of children's feelings and children identify strongly with these, e g stories about how children feel on reaching puberty, or on being bullied by adults and older children Children also love stories in which there is a sense of adventure or mystery

Some stories are quite informative in nature and are deeply rooted in their society and culture Information in terms of one's historical past, geography, people, culture, etc are passed on through these and there are simple stories about birds, animals, trees, earth, evolution, etc. with easily comprehensible facts, enough to arouse the children's curiosity and interest and sensitize them without loading them with too much information. Through these stories the child learns a lot without being pressurized These stories awaken his/her interest to the extent that he/she often wants to read more about that subject It opens new channels of communication and establishes a rapport between the child and the subject-matter and sets the momentum for further reading.

A few examples from textbooks of English language, geography, history and science are given below Also given are a few examples from story books to show how a story could be effectively utilized in teaching children.

English literature is taught like any other subject in school The beauty or the essence of the subject gets lost in dissecting each story and poem from the examination point of view—There are all sorts of questions which follow the text—fill in the blanks, word meaning, similies, crossword, etc. An English textbook for Class VI specified as being more participative in nature has very long stories One of these stories has 21 questions at the end, apart from other allied exercises.

Science textbooks and the way these are taught leave much to be desired There is a tendency to treat pictures as substitutes and indulge in trivial preaching instead of arousing the children's curiosity about things (Yashpal Committee Report)

In another textbook a picture is given in which all possible animals are shown like the monkey, elephant, turtle, fish, etc Students are asked to look at it and then compare plants with animals, animals with humans, etc , i e. to find out similarities and differences between them

Such information can be conveyed in a much more simple, spontaneous and natural way through the medium of stories A story about birds, their features and concept of migration is given below

> A small bird called Hoopoe is eating worms when a big bird alights by her side Hoopoe helps her and offers her food—a worm to her The big bird declines saying that she eats only fish. She calls herself a Pelican and tells the Hoopoe that she has flown down from a distant place in Central Asia, which is her home because it had got very cold there. Every year, during the same season, she along with her friends and family fly down to India That day a hunter shot at the Pelican and she had got hurt
>
> The Hoopoe then notices the Pelican's big beak and a bag under it The Pelican explains that the beak was big so that it could catch the fishes running under water quite easily and store it in the bag, to eat later whenever it felt hungry.
>
> Meanwhile another Pelican flies down and takes the injured Pelican to her home The Pelican and Hoopoe say bye to each other, with the promise of meeting again the next year (*The Visitor*, Picture Book, CBT, New Delhi)

Most of the information given in primary textbooks is too detailed and hence quite irrelevant at that stage But important information can be passed on in a simple way For example, an attempt has been made in the following story to pass the importance of vitamins, the deficiency diseases they cause and their cure in a story form which is often given in the textbooks in the form of a classificatory table:

> Billu, Mary, Savi and Chicklette are good friends who love going to school and playing together but they suffer from some problem or the other
>
> Billu cannot see properly at night Mary has cracks around her mouth. Savi's tongue bleeds a lot Chicklette who is so called because he is fond of eating chicklettes, and watching TV has suddenly developed bow-shaped legs
>
> Due to this they can neither play much nor study well They decide to go to a doctor called Anju auntie She sees each of them and says that their food lacks vitamins Seeing their blank expressions, she explains that a vitamin is an important substance present in food and fruits and that all human bodies need a certain amount of vitamins, failing which, they begin to have problems
>
> She calls Billu first and tells him that he is suffering from night blindness, due to less vitamin A for which he should eat a lot of green leafy vegetables, curds,

> papayas, pumpkins, carrots, etc
>
> Mary's food, the doctor says, lacks vitamin B and her problem is called Beri-Beri So she should eat a lot of green leafy vegetables, sprouted pulses, milk and liver
>
> Savi makes a guess that she has less of vitamin C She is right. The doctor says that she has Scurvy for which she is asked to eat amla, orange, coriander and mint leaves She remembers how her mother forces her to eat oranges and how she does not like them and runs away
>
> Chicklette quickly throws his chewing gum in the dust-bin and comes forward Anju auntie then tells him that he has little vitamin D in his body and his problem is called Rickets All he has to do is to play more in the sun instead of watching TV the whole day long
>
> The four of them come home and decide that they would now eat the food prepared at home without any *nakhras* and be careful about their diet Within a few days of their resolution, their health starts showing improvement

Here the same information is passed on in a natural and simple way without distorting or deleting facts.

History is the story of the past, but unfortunately history also ceases to be interesting because of so many unnecessary details, in a chronological order, things whose significance children are unable to understand An old Hindi song conveys this feeling quite well

*Sikander ne Porus se ki thi ladhai*
*To main kya karun?*

Children read *Amar Chitra Kathayen, Diamond Comics*, etc with a lot of interest, but the moment they pick up a history book, they begin to sleep

The very aim of teaching history is defeated because children are unable to relate themselves to their own heritage since too much information is given in too little time

*History, geography badhi bewafa*
*Raat ko ratto, subah safa*

All unnecessary details which a student is likely to mug up before examinations and forget afterwards can be deleted One could have history pictorially depicted—simple illustrations dealing with important and relevant information.

Geography is again an interesting and relevant subject but is taught in a dull and drab manner There's too much information and very little effort is made to relate it to the real world

There's a close link between history, geography and culture It is not always advisable to make such neat distinctions between them. They could be dealt with simultaneously thereby making it more relevant and interesting

Another story book (*Journey to Gaumukh*, Sheila Sharma, NBT, India) takes its reader on an exciting, adventurous trip to Gaumukh with two children and their grandfather In the process, it deals with the places, history, geography, the culture of its inhabitants, flora and fauna. They also learn about avalanches, hot springs, etc. By reading it, one can actually feel the place and learn a lot about it without being conscious of the learning process.

The problem of textbooks and the way they are written, relied upon and taught in school however does not exist in a vacuum. It has a lot to do with the way the learning process is seen and understood and the role and relationship between teachers and students in a formal school setting. The next section deals with this aspect of the problem

## Primacy of Dialogue: New Teacher-Taught Relationship

The evils of our education system have largely to do with a culture, a mind set which automatically assumes superiority of the teacher in terms of knowledge, age, experience, etc. and relative immaturity of the learner Adult-child relationship usually implies an inequality in which the adult talks at the child, not with the child. The child's world-view, perception, way of looking at things are often regarded as being deficient. The word 'childish' itself when applied to an adult's behaviour or thoughts is considered to be demeaning The very structure of the school building is often designed to ensure a subtle control over the students Most of the schools are built in a way which enables its supervisor or headmaster to keep a watchful eye on both the teachers and students. So the students are always conscious of the fact that whatever they say or do could come under observation of the invisible eye of the authorities.

The school building is distant, imposing and unfriendly in nature. The physical boundary of the school is also clearly marked out from the rest of the world which requires children to develop split personalities. The care-free, fun-loving, spontaneous nature of the child which he exhibits outside is unsuited for the school which encourages subdued, cautious and obedient behaviour The moment they don the school uniform, they are supposed to transform themselves and merge in one collective mass

The nature of the seating arrangement in class where all the students are placed in vertical rows with fixed seats, facing the teacher who is often seated on a raised platform, a pedestal, symbolizes the power equation between the teacher and the students. Students are often strictly prohibited to cross their bounds and step into the sanctified area of the teachers.

The teacher's authority is also evident in the act of comparing and marking/grading the child By comparing one pupil with another, in terms of behaviour or skills, teachers foster a sense of hurt and fear in the pupil. The examination system gives the teacher the authority to identify and thus label a pupil as a failure, or as stupid, etc , damaging his self-concept forever.

Teachers also punish students whose behaviour deviates from the norm set by the school, by reprimanding, or making him stand on the bench/outside the class or at times even physically beating the child

So in a situation, where the learner has no control over what/how to study, what to wear, what to say/how to behave, what aim to work towards, when to play, when to switch over from studying one subject to another (marked by the ringing of the bell in schools) to which side the balance tilts is very obvious. Both overt and covert pressure exists on the child to behave in a particular way

Time and again, progressive thinkers and educators, both in the West and India, have reacted against the traditional, autocratic way of teaching and have proposed a more humane, child-centred and sensitive attitude towards pedagogic process and students The basic tenets of progressive education are—education is the development from within of the potentialities rather than moulding from without, the curriculum should arise from the needs and interests of the child rather than from the demands of the teachers, children should not be coerced or punished and should be allowed to learn from experience rather than be told things. Here, in India, thinkers and educationists like Tagore, Aurobindo, Krishnamurti and Gandhi, etc reiterated similar views Aurobindo's basic tenet of learning is that 'nothing can be taught' and that the teacher is not an instructor or task master, but a facilitator, a helper and guide responsive to the expressed needs of the learner. Tagore emphasized the need to recognize the autonomy of the child and respect him as an individual He believed that only that teacher can teach who has himself been learning, one who has lost the child in himself is absolutely unfit for the great work of educating children. Krishnamurti was against the tendency of students to depend on the teacher as that would hamper their own creative process

It is not as if learning takes place only in schools. In fact we have seen that learning which takes place in schools is quite superficial, alien and unpleasant. As Illich pointed out that real learning is not the result of instruction but of direct and free involvement by the individual in every part of the learning process In a situation where the pupil has little or no control over what he learns or how he learns and is simply instructed by an authoritarian teaching regime, not much learning and individual growth can take place.

Instead of realizing the flaws in our education system and looking at our distorted attitudes and perceptions we tend to blame the students for not faring well in examinations, whose credibility itself is at stake Paulo Freire had pointed out that the education system was one of the major instruments for the maintenance of a culture of silence, i e the tendency to blame the victims—the poor—their ignorance and lethargy for their condition. In this case, the students, for failing the examinations.

In this context, views and experiments carried out by Gijubhai Badheka, Gujarat's famous educationist and teacher can be stated here. His educational theory emphasized the need for an atmosphere of independence and self-reliance He gave his idea an institutional basis by establishing his Bal Mandir in 1920 in Gujarat His *Diwasvapna* is the story of an imaginary teacher who rejects the orthodox culture of education and experiments to make learning a relevant, simple and enjoyable experience for children

This imaginary teacher attracts the attention of his students by telling them stories, playing games and actively involving students in the learning process. Poems, riddles, puzzles, word-building games were used to understand and learn concepts There were no textbooks Instead, a common pool of books containing one set of subject books and a lot of story books was maintained Innumerable stories were told and read by students.

One does not necessarily need too many resources or money to cure schools of their evils but a little bit of sensitivity, love for children, creativity and enterprise can make it a more meaningful experience. The school authorities and teachers today need to create an atmosphere in schools in which the pupil feels secure, protected, cared for, happy and feels at home. It is only when the pupil experiences this sense of happiness that there will be a constructive interactive process in schools, contributing to productive learning and growth of both the students and teachers.

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# Book Reviews

### *Girls' Schooling, Women's Autonomy and Fertility Change in South Asia*

by

ROGER JEFFERY and ALAKA M BASU (Eds)

Sage Publications, New Delhi, 1996, Rs 225.

WOMEN empowerment is a crucial issue in democratic societies. Democracy implies rights and autonomy to each and everyone irrespective of gender and class Unfortunately, in practice women do not enjoy rights and autonomy to the extent to which it is allowed constitutionally. In the case of women the autonomy has a direct bearing on their actual status and it signifies much greater status for them. Since autonomy is related to the freedom of decision-making for one's own life, in family matters, etc. it is to be seen as a major contributing factor for the empowerment of women. Whether this autonomy can be increased by schooling and can have a linkage with fertility as well, has been discussed in the book under review While discussing autonomy it was mentioned that autonomy has not been properly conceptualized even by the women themselves. Consequently, the older generation of women even now, try to suppress the younger ones despite their schooling not to say that their male counterparts do likewise They try to dominate women by and large due to lack of clarity with regard to the concept of autonomy of women and their own ego problems. Their misconceptions even goes to the extent of perceiving that autonomy would lead to loose charactered women. Often they are not ready to allow their womenfolk to have normal relations even with their own kin. Regardless of education and economic independence the autonomy of women is jeopardised and men's control remains a force to reckon with By taking up such a sensitive yet challenging area the writers have really done a timely job and tried to present an authentic scenario of the gross realities prevailing in Indian society and the societies of neighboring south Asian countries having a similar sociological and anthropological perspective

In fact the book focuses on three major problems faced by women in countries all the world over These problems of education, empowerment and population are the key issues among which the linkages were sought and interrelationships studied Out of the twelve chapters, the first three chapters are devoted to theoretical exposition of concepts such as female schooling, female autonomy and fertility and their interrelationships. The fourth chapter presents the findings of a case study depicting the lifestyle of Punjabi ladies belonging to two generations. The findings of the study indicate an attitudinal change in the new generation regarding decision-making, husband-wife communication, *purdah*, early marriage, dowry and so on The women of the new generation have moved out of the straightjacket with family support. The interesting aspect of their autonomy is that it has more significance to the family status rather than any concrete gain to women themselves The fifth chapter narrates the position of women in Pakistan where an evidence of correlation of schooling of girls with fertility is found in a positive direction though in urban areas only Chapter six deals with the problems of women belonging to a north Indian community called Jats. Here it is mentioned that schooled or non-schooled women can hardly be differentiated in respect to the use of autonomy due to cultural hegemony. Jats of North India practise female infanticide which is an invisible blot on women's status Moreover Hinduism and Islam have also contributed to fertility control in a negative sense Yet a silver lining is seen there, that is, an increase in schooling which has played an effective role in influencing community opinions regarding acceptable family size. Chapters seven and eight enlighten us on the pattern of relationship of female literacy with fertility and women's autonomy in Bangladesh. *Purdah* has a dominant role to play as a deterrent for the education of women particularly in rural areas Changes in attitudes and openness to new ideas form part of an overall explanation of fertility transition in Bangladesh Schooling, coupled with socio-economic status, urban residence and higher level of autonomy plays a vital role in controlling fertility Remaining chapters, i.e. ninth, tenth and eleventh project the scenario of North Indian situations with regional variations. Quite a dismal picture of Indian women has been narrated with regard to their schooling and autonomy. As far as South Indian women are concerned they enjoy greater freedom and is revealed as one of the major findings Chapter ten encompasses regional variations in female autonomy specially Gujarat in the West and Kerala down South Women in Gujarat are much less educated than their sisters in Kerala The women of Kerala have not only more schooling but greater contact with their natal kin and enjoy greater autonomy than the women in Gujarat

The last chapter deals with the experiences of Sri Lanka in the above-mentioned three areas Schooling for girls has a different connotation in Lanka. For them schooling is important for leading a better life Nevertheless, Muslims did express concern for morality and value of schooling of girls. Regarding reducing fertility, a major factor is the increase in the age of marriage In Sri Lanka, though a patriarchical society, male dominance is not absolute The society here allows a great deal of autonomy to women which stems from the absence of the joint family system, provisions for inheritance of property by women and above all the influence of Buddhism.

An overview of the content reveals that the editors tried to achieve their objective through the book in reference. The objective is reflected in the first sentence of the preface of the book which reads: "The causal link between female schooling and fertility change has had a high profile in policy-making circles but a weak theoretical and empirical basis whether the relationship between rising levels of schooling and declining levels of fertility was as universal and as causally connected as the policy discussions has assumed". Thus the main objective was to find out the answers to these questions Most of the papers are addressed to these questions The authors who attempted to specify the contribution of schooling to falling fertility rates discovered more inconsistencies. A partial reason for the inconsistency is the interaction between schooling and fertility which is different at different stages in a demographic transition. The moment the small family becomes a norm in society the educational level of women does not help in predicting fertility difference In fact, selection effect and threshold effect play a vital role in judging the relationship of schooling to fertility Selection effect refers to the possibility that those who adopt the norm in the beginning are likely to be different from those who adopt it as an established part of everyday life For example, women graduates of 1960s are certainly different from the graduates of 1990s in their behaviour and approach towards family size. As far as the threshold effect is concerned it means that some minimum level of schooling is needed before an impact is seen. Therefore, this threshold effect may vary from place to place and time to time due to the different levels of schooling which may create problems in tracing the correlation between schooling, autonomy and fertility

Another finding, though general in nature, revealed that the relationship between schooling and autonomy is not consistent This is quite clear from the chapter 'Regional Variation Female Autonomy and Fertility' by Leela Visaria where she writes: "Kerala exhibits much higher level of female schooling and much lower level of fertility than Gujarat, here female autonomy measures instead suggest that the autonomy of Gujarati women is greater". On the contrary, in the chapter 'Female Autonomy and Reproductive Behaviour in Kerala' the status of female autonomy has been expressed differently in these words "the usual concepts of female autonomy and its measurement should not be used in Kerala, for the long history of matriarchy among certain sections of its population make ownership of property and association with natal kin a culturally accepted practice" Ownership of property and association with the kin add to their autonomy

Regarding the limitations on women's autonomy there are various factors of which the social context of decision-making is the most influential one This context includes family pattern, i e nuclear or joint household, early marriage, employment, etc. which determine the range of autonomy of women

The above-mentioned findings suggest that the links between cultural patterns and agrarian system have assumed a great deal of importance in relation to female autonomy and the variations described in different papers For example, Leela Visaria's paper brings out the contrast between North and South India, Sajeda Amin distinguished Rajshahi with the rest of Bangladesh and Zeba Satha's analysis shows the rural urban difference. Besides, there are some questions connected with dowry and *purdah*, which are in practice in most of South Asia, are not attended to in various studies Similarly the effect of schooling on fertility remains unexplained in spite of the efforts made by the authors in establishing a link between schooling and autonomy

Two policy issues emerge out of the major findings The first policy issue is related to education and the other one is regarding family planning. A section of people feel that a part of the family planning budget can be diverted to primary education of girls whereas the other section feel that since there is a weak relationship between schooling and fertility, the support to primary schooling is not needed at all. Regardless of these contradictory opinions the case of girl's education is favoured and supported as a policy The other issue advocated as a policy is making maternal and child health services and family planning services more user-friendly to all womenfolk whether educated or uneducated.

Besides these policy issues a clear conclusion is also drawn that female schooling cannot be expected to resolve the wide range of social problems in South Asia unless and until a determined social reform is envisaged to bring about the social change in respect of women autonomy and fertility level

The book is enriched with references appended to it which will facilitate the researchers in a big way The majority of the papers present primary evidence from India, Pakistan, Sri Lanka and Bangladesh utilising existing census and surveys It is recommended for reading by all concerned with the upliftment and empowerment of women such as activists, politicians, policymakers, educationists, demographers and so on All in all the book proves to be a valuable addition to the studies on women

SARLA RAJPUT

## *Science Teaching for the 21st Century*

by

NARENDRA VAIDYA

Deep and Deep Publications, New Delhi; 1996; Rs 600; pp. 503

THE Indian civilisation is known for its insistence on the full flowering of the spirit in all spheres of life. This has been so over the last four thousand years. Awareness of beauty and the need to establish harmony with nature are the well-known manifestations of the growth of Indian civilisation. All along, the principle of universal brotherhood and affirmation of love for all living beings have been a distinguishing feature. A rational, logical and scientific approach has been the guiding factor The basic principles of science have found a place in the efforts of the individuals and the societies. Creativity, initiative and exploration have been the hallmark of the scientific methods developed in India. The scientific method is so comprehensive that it includes imagination, reason and their application in the areas of creative ventures, innovations and efforts. Gokak (1994) finds this as 'understandable but not adequate' and adds that 'if lasting results are to be achieved, love or intuition, which really is the soul-gaze of man has to lead them to the desired transformation.' 'Awareness of beauty', 'the brotherhood of man through the affirmation of love' and 'harmony with nature' are essential for humanism and socialism to thrive according to Dr Mulk Raj Anand Such efforts, all along have resulted in better understanding and appreciation of nature and whatever is happening around. Researches, explorations and innovations in science are as critical and essential today as these were at any point of time in the past.

Discoveries, inventions, laws and theories are terms linked to growth and development of science and society S. Chandrasekhar (1991), the Nobel Laureate in Physics, is very clear and explicit about his perceptions of what motivates the scientists' work. According to him, substance and reality comes to the efforts of a scientist from his desire to participate actively in the progress of science to the best of his ability. He elaborates it further·

> And if I have to describe in one word what is the prime motive which underlies a scientist's work, I would say systematization. That may sound rather prosaic, but I think it approaches the truth What a scientist tries to do essentially is to select a certain domain, a certain aspect, or a certain detail, and see if that takes its appropriate place in a general schemes which has form and coherence, and, if not, to seek further information which would help him to do that. This is perhaps somewhat vague, particularly, the use of the words 'appropriate', 'general scheme.' 'form,' and 'coherence ' I admit that these are things which cannot be defined any more than beauty in art can be defined; but people who are acquainted with the subject have no difficulty in recognizing or appropriating it

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Gokak, V K *India and World Culture*, New Delhi, Sahitya Academy, 1994

To clarify this point further, Chandrasekhar reproduces a quotation from Rutherford

> It is not in the nature of things for any one man to make a sudden, violent discovery, science goes step by step and every man depends on the work of his predecessors. When you hear of a sudden unexpected discovery—a bolt from the blue, as it were— you can always be sure that it has grown up by the influence of one man on another, and it is the mutual influence which makes the enormous possibility of scientific advance. Scientists are not dependent on the ideas of a single man, but on the combined wisdom of thousands of men, all thinking of the same problem and each doing his little bit to add to the great structure of knowledge which is gradually being erected

## The Way Science is Taught

At the present juncture, science and technology have become household terms. It has been discussed on umpteen occasions how these have transformed the quality of life, and also the approach and attitude to life It has been well analysed how these have created perceptible impact on social structures, economic endeavours and cultural pursuits The present debate is how the 21st century would assimilate science and technology, what would be the pace of the change in human endeavours because of developments in science and technology and their consequential impact on the social, cultural and economic scenario? Hopefully, in the 21st century, elementary education would be universalised even in countries like India which are at present lagging far behind. It is also a universal phenomenon that education systems everywhere are not only trying to universalise elementary education but are simultaneously attempting the universalisation of science education as well The immediate pragmatic question would be to assess what is being done in schools on this front Those who understand it would certainly like to foresee the probable scenario in the 21st century and also the shape of science teaching and learning in schools. This would definitely have a close relationship with what is being done in schools today and what are the changes taking place in the society in significant areas of human activities Understanding of the demands of community from science education and how the education systems and the schools could respond to these by providing a realistic, forward looking and relevant learning of science, would remain of interest in future years as well

The Education Commission (1964-66), popularly known as the Kothari Commission, for the first time recommended learning of science by all children during the first ten years in schools. Earlier girls had the option of not learning science at all. The boys were also not required to learn science beyond the upper primary or even primary stage of school education This recommendation of the Kothari Commission was a major breakthrough. It required large number of science and mathematics teachers in schools, who were not available readily Those in service were not professionally prepared to handle the new challenges. The implementation of the 10+2 pattern of education initially resulted in serious confusion in education systems of

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Chandrasekhar, S *Truth and Beauty Aesthetics and Motivations in Science*, New Delhi, Viking, Penguin Books India, 1991.

the states/UTs which were not geared to provide suitably trained teachers, equipment and laboratories to meet the objectives of the policy which was implemented as a consequence of recommendations of the Kothari Commission Over the years, the situation has improved but it would be difficult to say that the quality of science teaching and learning has also improved There have been several positive changes; new curricula have been developed, use of education technology has been encouraged and new communication technologies are being used. However, a longer list can be made of things not being done in schools and institutions to strengthen teaching and learning of science. The implementation is weak, infrastructures are inadequate and the curricula are not always indigenous The race for vertical mobility still-dominates the 'pshyche' of Indian parents and children who are keen to join the medical or engineering profession. Learning science for life almost stands ignored In each class science is learnt to prepare for the next higher class—even today The critical issue is—how do our students learn science, and, how our teachers teach science? Who could provide an answer to this other than one who has been a teacher, a teacher educator, a researcher in science education and an individual with a lifelong commitment and devotion to science in schools Narendra Vaidya is one such individual His latest book *Science Teaching for The 21st Century* attempts to provide answers to many of the queries and questions that arise in science education

### Why This Book?

Narendra Vaidya has toiled for more than three decades as a researcher in the field of science education. His researches, research papers and books have received wide acclaim outside India. This is not unusual. Recognition always takes a very interesting route, it always travels back to India from abroad Vaidya, however, remained unperturbed and continued his efforts single-handedly for most of these years A book from him at this stage should raise high expectations As a practitioner in science education, a well-known educationist and researcher with a flair to plough back the outcomes of his researches to the classrooms, Vaidya is most suited to write a volume which is comprehensive in nature and projects a vision for future. The aims and objectives of the book are timely and provide all that someone would like to be included in a treatise on science education in schools.

The author would like the present volume to 'serve as a basic methods text for those who wish to specialise in teaching of science'. He has, however, included materials at higher levels and much beyond the prescribed requirements of training systems. It would, however, be difficult to find readers among either teacher trainees or teacher-educators, who would be voluntarily willing to put in extra efforts After all, our education systems in actual practice aim at preparation for the final examinations alone. Consequently, the materials which are preferred are those prepared with an eye on the terminal examinations The other objective which attempts to pick up current issues in science education and examine these in an open-ended manner has been, to a great extent, achieved by the author In this process, the questions of content and pedagogy and content-cum-methods become very important The author himself a content specialist as well as a seasoned method-master has attempted to present the material that would interest both the subject specialists and the method masters In India, the issue of content-cum-methodology has unfortunately not been resolved as yet and the debate continues The well-known experiment of four integrated courses in science education, launched in the mid-60s in the four regional colleges of education has remained experimental even after more than three decades The superiority of these programmes stands well established. However, there has not been any concerted effort to multiply the integrated teacher education programmes in other institutions

## The Approach

One of the objectives highlighted concerns the very approach towards science teaching The author would like it to be approached conceptually rather than factually It is debatable whether we are really preparing our teachers on these lines Not many teachers who guide activities and experiments in the 'classrooms' are aware of the fact that these must reflect the nature and spirit of science Probably a total transformation of both teacher preparation programmes and the present approach to teaching and learning of science would be essential The issue of optimum utilisation of resources in science education and mobilisation of local resource is critical and has been dealt with appropriately in the volume. There are a large number of open-ended ideas which could be utilised in teaching as well as understanding of the basics of science.

One of the major objectives of such an effort would obviously be to ensure higher learner achievements in science While going through various chapters this concern could be visibly identified at several places Some of the factors affecting attainments are rather known The author has quoted W J Jacabson and Rodney Doran on this aspect (410) Their list includes early learner specialisation, strong background in physical science and mathematics, relationship between home and school, positive attitude towards science and the study of science. These are correlated with achievements in science Not much extra effort is required to nurture positive attitudes in home and in and outside the school

## Possibilities

How could science education be really improved in our schools? Some of the components identified by the author (459) are. better adaptation of teaching-learning to individual needs, encouragement of students towards acceptance of responsibility for learning; increased opportunity for co-operative work by students for their own improvement, more emphasis on question answering and problem-solving; greater satisfaction of learning derived by students, a sense of self-attainment experienced by the students as active partners in the game, and increased possibilities for experiencing the joys of teaching and learning The question posed is—why is this not actually happening in schools?

In the context of teachers the author has identified certain 'impact nuclei' (460), which include: stress on productive thinking and creativity, focus on discovery, children's science, scientific literacy, motivation, community resources in science teaching, research in science education (action research). In addition, others like science clubs, science museums, aquarium, home-made apparatus, teachers' own professional growth, resource materials would of course be included These components have been very elaborately dealt with in the book and provide an interesting and enjoyable chapter. It may, however, be worthwhile to mention that the chapter on elementary and secondary laboratories and classrooms is probably deficient in the context of preparing for the 21st century and universalisation of science education This is particularly relevant to countries like India where the number of learners is a major issue Those in remote and far-flung areas are still not within the ambit of basic education and resources, both material as well as human are in short supply. It is not easy to perceive availability of good buildings, good laboratories and items like working computers, VCRs and TVs in every school and every region, though it indeed would be desirable at the earliest Stark realities do dampen enthusiasm on many occasions.

A close perusal of the volume highlights several issues which would be faced by the teachers and learners of science in the near future The issues of training teachers of science, relevance of curriculum of science and resource mobilisation would remain prominent before the planners and plan implementors This book must not only find a place in the library of each school and college but should also be read thoroughly by every science teacher and science teacher-educator. It is one volume which needs to be read by those who take policy decisions on science in ministries and departments and also by those who plan implementation of policies at national and state levels. Vaidya has done great service to the cause of science education through the present effort which is both comprehensive and elaborate His scholarship, learning and concern are visible throughout the book He deserves gratitude from all those who are concerned with science and science education

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